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Electrical World

NEWS ISSUE DECEMBER 28, 1946

Laurence M. Klauber, Newly Elected President of the San Diego Gas & Electric Co.

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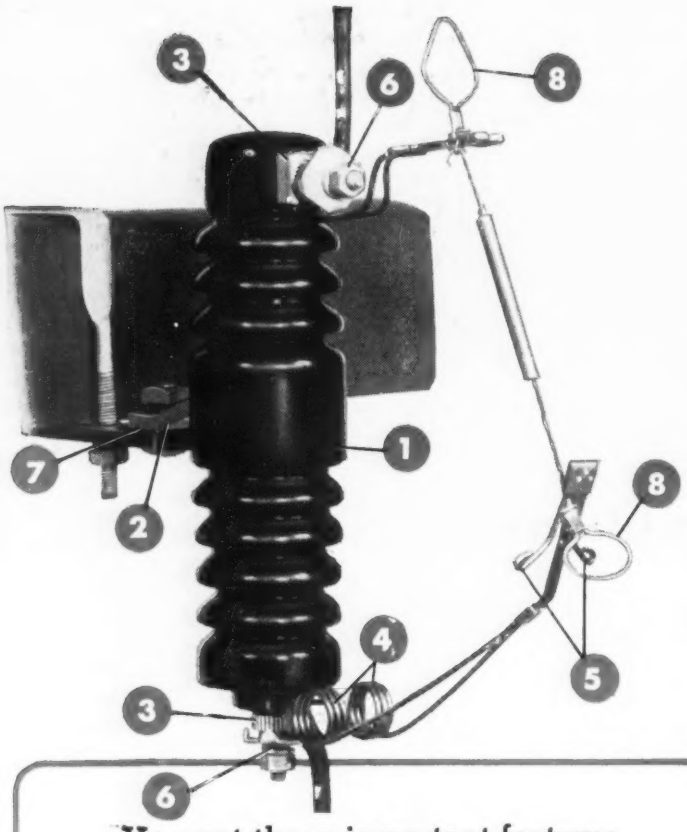

Improved G-E FLIP-OPEN FUSE CUTOUT

7500/12500 Grd Y and 15000 Volts, 50 Amperes

For Rural Service

This improved G-E Flip-open fuse cutout of simple construction, provides inexpensive primary fusing for rural line service—where circuit conditions impose a less severe interrupting duty on the cutout, and where the advantages of the conventional hinged fuseholder type of cutout may be dispensed with.

This cutout provides over-current protection by means of a fuse link, without a hinged fuseholder tube. Expulsion action is obtained entirely by the fuse link tube—a unitary part of the fuse link. The fuse link is supported in tension between spring contact arms, which pull the lower cable terminal out of the fuse link tube when the fuse link melts.

A complete description of this improved G-E Flip-open cutout for rural service, Bulletin GEA-4224, may be obtained through your G-E representative or by writing to Apparatus Department, General Electric Company, Schenectady 5, N. Y.

You get these important features in the G-E Flip-open fuse cutout

1. ***Wet-process solid porcelain insulator,*** with undercut petticoats, provides for greater insulating strength.

2. ***Mounting support cemented in back of porcelain insulator,*** makes cutout virtually birdproof against short circuits from fuse contacts to hanger, thereby preventing unnecessary fuse blowings.

3. ***Terminal studs, supporting fuse contacts,*** are cemented in porcelain insulator, providing increased strike distance from live parts to hanger. Also assures positive location and non-twisting alignment of fuse contact arms.

4. ***Helical-wound, nickel plated, double coil springs*** of strong copperweld steel retard sidesway of contact arm and avoid vibration stresses on the fuse link. These assure proper tension on fuse link and positive separation of blown fuse when fault occurs.

5. ***Double-wedge contacts, nickel plated,*** permit fuse link to be inserted from either side of the cutout. Contacts grip the fuse link cable with heavy pressure, securely holding the cable ends after fuse link has blown.

6. ***Exceptionally strong clamp-type terminals*** each provide for positive clamping of either one or two conductors No. 1/0 or smaller.

7. ***Mounting of cutout to hanger bracket*** enables side-swivel, vertical or angle-tilted mountings. Shakeproof lock washer securely holds cutout in mounted position.

8. ***Fuse-link with ring loop at each end*** enables easy insertion or removal with switchhook. Either Hi-Surge, or conventional types of Flip-open fuse links, are applicable.

406-19-5800

GENERAL ELECTRIC

ELECTRICAL WORLD

VOLUME 126 NUMBER 26

NEWS ISSUE

DECEMBER 28, 1946

Agricultural Engineers Study Farmers' Electric Problems

Single Phase Considered Adequate for Farm Service—Motor Rating of 7½-Hp. Maximum Advocated for Equipment—Rate of Return for Electrical Investment on Test Farm Is 49.6%

FARM EQUIPMENT DESIGN, rural electric service facilities, and the economics of farm rates and returns to the farmers were subjects for special attention during four rural electric sessions at the American Society of Agricultural Engineers meeting in Chicago last week. Ventilation and lighting of dairies and application of motors for an increasing list of farm chores were other subjects for discussion.

An important general conclusion from several papers and the ensuing discussion is that single phase will be adequate for practically all requirements of farm service. A maximum motor rating of 7½ hp. was advocated for farm equipment, and a plea was made that electric service companies should permit this rating on single-phase wiring.

Lee Moore, Rural Electrification Administration, opened the question of single phase and three phase, observing that there is general agreement that single phase will be sufficient for individual farm services. He called for a study of continuity on rural distribution, stating that it is more important here than in the city and that uncertainty of continuity may be responsible for a delay in full electrification. He mentioned the oil circuit recloser as an important example of new developments for rural service.

A. E. Anderson, Commonwealth & Southern Corp., reviewed the elements of electric rate structures and called attention to the trend toward higher demands and lower load factors in farm use. He said that many urban residential rates, based on less than 1-kw. demand and about 25 percent load factor, have been extended in principle to rural service but that load factors actually are decreasing with every increase in demand. He showed results of a 500-customer survey with 19.4 percent annual load factor at 6-kw. demand and varying about on a straight line to 14.1 percent at 11 kw.

A. H. Hemker, General Electric Co., reviewed several farm equipment applications and concluded that much better design is needed on many machines. He said that 7½-hp. motors would handle any usual farm machine, and he believes that three phase should be avoided because of the added cost of having two services and wiring systems. Two smaller motors can often be applied better than one large motor and will be less expensive than larger motors with starting their equipment.

B. G. Perkins, Doane Agricultural Service, gave an analysis of costs and returns from a test farm in eastern Ohio. Electric help eliminated 535 man-hours of work in one year with an equipment investment of $535, and an annual cost, including depreciation and energy, of $103. During the year the farm earned 69 cents per man-hour of work. From his complete figures he concluded that the rate of return on the electrical investment was 49.6 percent.

Data on Barn Ventilation Needed

T. E. Hienton, U. S. Department of Agriculture, reviewed recommendations for forced ventilation of dairy stables and poultry houses as a means of improving animal health and increasing production. Beneficial results have been demonstrated, he said, but there is need of much more basic data than now available to establish optimum conditions of moisture content and other requirements.

Past estimates of farm power consumption have been based only on the farm home, and use for farm power development will require a change in line capacities, in the opinion of D. W. Teare, U. S. Department of Agriculture. He presented data for estimating farm utilization and showed results in one check area with use 50 percent greater than the most optimistic estimate of ten years ago.

Index Available

Electrical World's semi-annual index, which prior to the war was included in the last issue in December, is being printed separately and will be available shortly. It may be obtained by subscribers without charge on request. Address requests to Editor, Electrical World, 330 West 42nd St., New York 18, N. Y.

Badger Co-op Appeals

Badger Electric Cooperative of Amery, Wis., has appealed to the Dane County Circuit Court, seeking reversal of the Wisconsin Public Service Commission's ruling which denied its application to buy and operate the properties of the Wisconsin Hydro Electric Co. in the northwestern part of the state (ELECTRICAL WORLD, October 12, Page 90).

ELECTRICAL WORLD—Published weekly by McGraw-Hill Publishing Company, Inc. Publication Office, 99-129 North Broadway, Albany 1, N. Y. RETURN POSTAGE GUARANTEED. Editorial and Executive Offices, 330 West 42nd St., New York 18, N. Y. Allow at least ten days for change of address. All communications about subscriptions should be addressed to J. E. Blackburn, Jr., Director of Circulation. James H. McGraw, Founder and Honorary Chairman; James H. McGraw, Jr., President; Curtis W. McGraw, Senior Vice-President and Treasurer; Joseph A. Gerardi, Secretary; Nelson Bond, Director of Advertising; Eugene Duffield, Editorial Assistant to the President; J. E. Blackburn, Jr., Director of Circulation. Subscription rates: Single copy 35 cents. In the United States, $6 a year, $9 for two years, $12 for three years. Canada, $7 for one year, $11 for two years, $14 for three years. (Canadian money at par.) Pan-American countries, $15 for one year, $25 for two years, $30 for three years. All other countries $20 for one year, $30 for two years, $40 for three years. Please indicate position and company connection on all subscription orders. Entered as second-class matter November 10, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in U.S.A. Copyright 1946, by McGraw-Hill Publishing Company, Inc. All Rights Reserved. Cable address McGraw-Hill, New York. Member of A.B.P. Member A.B.C.

THIS WEEK'S NEWS BRIEFS

CANADA has honored its electrical industry with one of the stamps in a new series of nine illustrating the basic industries and raw materials of Canada. The 14-cent stamp in the series shows a hydroelectric station on the St. Maurice River in Quebec.

CALIFORNIANS who place deposits on an electric appliance at more than one store have no legal recourse to recover their deposits from the other store or stores after one has delivered the appliance, the State Department of Justice has ruled.

WHILE MANY UTILITIES are offering service at a flat rate to new customers for whom they cannot secure meters, the North Little Rock, Ark., municipal system is offering the flat rate to old customers who are willing to have their meters removed and to pay at a rate equal to their average monthly bill for the preceding year. The meters would be placed in the homes of new customers.

ONE OF THE LONGEST transmission spans in the United States is the new Pennsylvania Power & Light Co. span across the Susquehanna River at Millersburg, Pa. Steel poles embedded in concrete are terminals for the three 5,509-ft. conductors. Straight line distance between terminals is 5,366 ft.

AN ELECTRIC WELL has been discovered at the site of a new transmitter building for radio station KSO at Des Moines. The current comes from 80,000 ft. of No. 8 gage bare copper wire buried a foot under the ground at the site and is strong enough to illuminate a light bulb or play a 6-volt battery radio. "Apparently the electricity is the result of the difference in potentials between the earth currents in the sand and gumbo in which the wire is buried," Orrie M. Miller, station electrician, said.

CHRISTMAS, FLA., has been promised a Christmas present, electricity for the first time since the village was established on Christmas day, 1835. The Rural Electrification Administration has approved plans for the newly formed Christmas Electric Cooperative, and the present will arrive within a few months.

CHIEF ELECTRICAL ENGINEERS of municipal systems in England, by agreement with the local authorities, are to receive annual salaries of £2,371.

3 Unions Gain Bargaining Rights in Ohio Utility Vote

Three unions have been certified as bargaining agents for employees in various plants of the Ohio Public Service Co., Cleveland, Ohio, following elections conducted by the National Labor Relations Board.

The Utility Workers Union, C.I.O., which struck the Mahoningside power plant at Warren in October (ELECTRICAL WORLD, October 12, Page 96) won a sweeping victory over the Operating Engineers Union, A.F.L., at that plant, garnering 80 of the 91 valid votes cast. The Utility Workers Union also won the right to represent employees at the Lake Park, Edgewater, Melco, and R. E. Burger power plants as one unit by obtaining 108 votes as against 83 for the Operating Engineers.

The Operating Engineers, however, will represent employees at the Scioto power plant as a result of defeating another A.F.L. union, the International Brotherhood of Electrical Workers, 30 to 16. There was one vote for neither.

The I.B.E.W. will bargain for distribution department employees at Cleveland, where it received 161 out of 254 votes cast and 93 against; at the Warren division, where it received 27 votes and the C.I.O. 20, and at the Marion division, where it received 46 votes and the C.I.O. 4.

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Canadian Output Statistics

The Dominion Bureau of Statistics has released the following output statistics of Canadian central electric stations in thousands of kilowatt-hours:

Period	1946	1945
Nine months	30,814,849	30,265,891
Primary	25,082,097	25,163,976
Secondary	5,732,752	5,101,915
Exports to U. S.	1,983,151	1,970,121
September	3,265,860	3,079,310
Primary	2,725,632	2,601,286
Secondary	540,228	478,024
Exports to U. S.	199,879	215,831
August	3,439,934	3,237,613
Primary	2,801,294	2,723,802
Secondary	638,640	513,811
Exports to U. S.	232,402	229,746

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Franchise Renewal Voted

Voters of Hollister, Mo., have granted a ten-year franchise renewal to the Empire District Electric Co.

Taft Sees Congressional Checks on Public Power

Proposal by the public power bloc in Congress to further push the federal government into the electric power business will meet with strong opposition from the Republican-controlled Congress when it meets next January. Present proposals for valley authorities and the construction of multi-purpose projects as recommended by the U. S. Engineers will receive close scrutiny as efforts will be made to reduce the federal budget sharply.

These indications were given by Senator Robert A. Taft in a private interview last week in Atlanta. Senator Taft said that the Republican Congress will go along on flood control and rivers and harbor work but will carefully review all proposals dealing with multi-purpose projects. He said that it is likely that the U. S. Engineers will have to raise their standards on projects which they may consider economical and profitable public ventures.

Senator Taft said that he was not familiar with all the details of the Clark Hill multi-purpose project on the Savannah River near Augusta, but he said that if the Savannah River Electric Co. will incorporate all the flood control, navigation and other special features as proposed by the U. S. Engineers, then the Congress is likely to give the utility a sympathetic hearing and to let private industry take over the project.

The petition of Savannah River Electric to take over the construction of the project is still before the Federal Power Commission. No decision has been given as yet and indications are that the FPC may refer the matter to Congress for final decision. Meanwhile the U. S. Engineers are rushing their plans to block every possibility of losing the $45,000,000 job and the prospects of constructing some ten other dams on the Savannah River at some future date.

Recently the Boyle Construction Co., of Sumter, S. C., was awarded a contract for construction of the west embankment of the dam on a low bid of $240,000. Contract for construction of a diversional channel is likely to be let in the near future as bids have been asked.

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80,000-Kw. Unit Planned

Central New York Power Corp. will add 80,000 kw. of capacity to its Oswego steam plant to increase its capacity to 240,000 kw. The new unit is to be in operation by December, 1948.

Smith Elected Chairman of FPC When Olds Quits

Shift Considered Attempt to Gain Favor with Incoming Republicans —Richard Sachse Is Vice-Chairman

A shift in the chairmanship of the Federal Power Commission, representing an internal move within the commission to present its best front to the incoming Republican Congress, was made this week when Nelson Lee Smith, New Hampshire Independent member, replaced Leland Olds, who resigned.

Long a target of criticism by G.O.P. Congressmen, Olds was subjected to particularly caustic questioning as to his views on valley authority proposals by minority members of the House Appropriations Committee last spring. FPC's appropriations for the current fiscal year also fell considerably below the Commission's request.

Olds Resignation Expected

The Olds resignation, which had been predicted for several months, left the political complexion of the commission's membership unchanged, with three Democratic and two Republican members. However, of the Democratic majority only Commissioner Olds and new Vice-Chairman Richard Sachse are regarded as "liberals" by political observers, who rate Commissioner Harrington Wimberly as a conservative Democrat. Commissioner Claude L. Draper, Wyoming Republican, is the second minority member.

A graduate and former member of the faculties of Dartmouth College and the University of Michigan, Chairman Smith was appointed to FPC in 1943. He served for eight years as a member, then as chairman of the New Hampshire Public Service Commission, and in 1939 was elected president of the National Association of Railroad and Utilities Commissioners. In 1941, President Roosevelt appointed him chairman of the Board of Investigation and Research, a post he left to become a member of FPC. His term of office expires in June, 1950.

As a commissioner he occasionally dissented from the opinions of the majority of FPC on cases involving rate schedules for public power projects. A notable example was his minority opinion opposing the present Bonneville Power Administration rate base, which, he contended, contained overcharges for navigational development.

Mr. Olds, who will continue as a member of the commission, has twice been its chairman, first appointed to FPC in 1939, he was elected chairman in January, 1940. His term of office

NELSON LEE SMITH

expired in June, 1944, and he was succeeded as chairman by Basil Manly. Upon the latter's resignation in October, 1945, Mr. Olds served as acting chairman until the following December, when he again was elected to head the regulatory body. He will complete his term as a member of the commission in June, 1949.

Commissioner Sachse, who was elected vice-chairman last week, is a Californian. After serving eleven years as chief engineer for the Railroad Commission (now Public Utilities Commission) of that state, he became a member and president of that body. He was appointed to FPC in 1945 to fill the vacancy created by Commissioner John W. Scott's resignation. His term expires in June, 1947.

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Ottawa Voters Back Bond Issue to Purchase Utility

Ottawa ratepayers have voted 6,784 to 1,705 in favor of a $3,500,000 bond issue to finance the purchase of the distribution system of the Ottawa Light, Heat & Power Co. by the city.

The Ontario Hydro-Electric Power Commission which furnishes power to the Ottawa Hydro Commission will advance $1,000,000 to complete the purchase price of $4,500,000.

At present both the public and private utilities offer services in Ottawa, and the purchase will eliminate duplication of wires and other facilities.

Ottawa Hydro has agreed that all taxes payable by the company to the City of Ottawa will be paid in full for the first calendar year after purchase. For the ensuing four years taxes will be decreased by 20 percent annually until they reach the amount payable under provincial statutes. The city will continue to receive taxes from certain real estate and the gas plant.

Massachusetts Utility Sets Up Hydro Reserve Fund

Following conferences between the Massachusetts Department of Public Utilities and the Western Massachusetts Electric Co., Greenfield, an agreement has been reached under which the large fluctuations due to variations in Connecticut River flow affecting hydroelectric generation will be stabilized by the creation of a so-called hydroelectric reserve. An appropriation of $400,000 from the surplus of the company will be set up for 1946, and the reserve will be increased in periods of above-normal water supply and resulting output, and drawn upon in periods of below-average river flow through the use of a plan based upon the long-term average hydroelectric generation experienced by the company in past years.

It is expected that the establishment of this reserve will benefit the company, its customers, and the regulatory commission in the establishing and regulation of rates in the future. Variations in generating cost due to fluctuating river flow and corresponding production or purchase of fuel-generating power are looked upon as a hindrance to sound rate making. The commission believes that the company's proposals, made by its president, Howard J. Cadwell, will contribute to the more accurate evaluation of earnings and to sound regulation of rates.

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Saskatchewan Mine Firm to Add 21,000-Hp. Capacity

Addition of a 21,000-hp. hydro generating unit by the Hudson Bay Mining & Smelting Co. at its Churchill River power plant at Island Falls, Sask., as soon as materials become available, has been announced by J. L. Phelps, Resources Minister of Saskatchewan.

The present 90,000-hp. isolated plant at Island Falls was built in 1928 to furnish power for the Flin Flon mining district where more than $18,000,000 worth of gold, silver, copper, zinc, and cadmium were mined in the 1944-45 fiscal year.

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$37,000,000 in 5 Years

A $37,000,000 construction program spread over the next five years is to be launched immediately by the Ohio Public Service Co. Included in the program are the addition of 100,000 kw. of capability to the R. E. Burger plant, 65,000 kw. to the Edgewater plant, and the construction of new substations, transmission and distribution systems.

G.E. Prices Must Increase if Wages Go Up, Wilson Says

President of Manufacturing Firm Blasts Concept of Higher Earnings as Ruinous to Both Company and Employees, Wants Moratorium in 1947 to Allow Company to Broaden Market

THE General Electric Co. will be unable to absorb any general wage or salary increases in 1947, its president, Charles E. Wilson, asserted at a news conference this week. Striking at the concept that wage increases comparable to those negotiated last year can be granted without price increases, Wilson asserted that General Electric would have to meet every increase of 1 percent in wages and salaries with an increase of .75 of 1 percent in prices.

Such a course, he warned, would react against both the company and its employees, asserting:

"We are strongly of the opinion that any such price increase would contract our markets severely."

Wilson emphasized that G.E.'s customers—not its employees—need first consideration at this time, after five years of increasing prices.

Wants Moratorium in 1947

Wilson suggested a moratorium on wage and price increases for 1947, during which time, he said, G.E. could apply for the first time "the advances in technology which we know were attained during the war." At the same time, with a year of trouble-free operation unimpeded by labor disputes and materials famines, he said, G. E. would be more nearly able to offer the price reductions which would broaden its market and increase its employment. Wilson asserted that at the end of such a year, G.E. would "offer lower prices if it could—and I believe we could."

Conceding that any such year-long moratorium would have to be industry-wide if it were to have the desired effect, Wilson declared his belief that industry would guarantee a year's price-boost moratorium if labor would guarantee a similar wage-boost moratorium. Such an agreement, he said, seems unlikely of achievement but negotiation with unions is the only way to realize it. He added that G.E. would use every argument it could make on behalf of such a moratorium and pointed out that the position is "not wholly a selfish one, since the inflationary spiral is the inevitable result of failure to halt wage and price increases."

Throughout his statement, Wilson made it unmistakable that G.E. will have to pay for any 1947 wage increases with price increases and equally unmistakable that, in the company's opinion, the latter are as bad as the former.

In discussing price increases which would have to result from general wage increases, Wilson said it would be "naive" to expect the company's suppliers to absorb wage increases they might be forced to grant. He said that there are "already some signs that the public is getting fed up with continual price increases," and added that G.E.'s 1946 volume of $900,000,000 could be continued and expanded only if existing wage-price levels be maintained.

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Samuel Thompson Named to River Basin Committee

Samuel H. Thompson has been named by Secretary of Commerce Averell Harriman as the Commerce Department's representative on the Federal Inter-Agency River Basin Committee.

The appointment was made at the invitation of the committee, composed of members of the Agriculture, Interior, and War Departments and the Federal Power Commission. Two Commerce agencies, the Weather Bureau and Coast and Geodetic Survey, already are participating in the work of the committee, which was organized in 1943 to coordinate the planning, construction, and administration of multi-purpose river development projects.

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Lewes, Del., Signs 5-Year Pact with Private Utility

Delaware Power & Light Co. has signed a contract with Lewes, Del., to supply power to supplement the output of the municipal plant for the next five years. The utility will erect a 22/44-kv. line to a substation at the municipal plant, and switches will allow city operators to connect any distribution circuit of the city system to the private utility system.

The Lewes plant is now carrying peak loads and has no reserve.

Consumers P.P.D. Reveals Buying and Selling Policy

Consumers Public Power District, Columbus, Neb., which since January 1 has bought eight and sold five distribution systems, has informed ELECTRICAL WORLD of the policy governing such transactions.

It is the district's purpose to provide "adequate electric facilities to the communities it is now serving and to serve at either retail or wholesale those communities that may now be supplying themselves with their own plants, or at retail those that we are now selling wholesale, if this is the desire of the communities," General Manager V. M. Johnson said.

The district, he added, does not desire or intend to "intrude, and any offer for a system is made only at the suggestion or request of the municipality . . . Nor does district want to dispose of any of its property except where we feel by so doing it will be more economical to the community and to the district as well."

Some of the property sales have been made to clear up competitive situations which are always uneconomical, Mr. Johnson explained. In other instances it has been found that where some of "our towns are not integrated with our complete system, it may be feasible or economical to dispose of the property to some REA cooperative. Some small parts of our property have thus been sold."

The eight small towns which have sold their distribution systems to the district are Tamora, Funk, Hazard, DuBois, Crookston, Nenzel, Kilgore, and Cody.

The district, which was competing with the City of Grand Island in that city and St. Libory, sold its interests to the City of Grand Island. The distribution systems in Millerton, Loma, and Garrison, and certain rural lines were sold to the Butler County Rural Public Power District.

Consumers now serves 292 towns at retail and 76 at wholesale rates, including Blomfield and Leigh which were added this year.

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Seeks Higher Recompense

West Canadian Hydro-Electric Corp., whose electric properties were expropriated by the British Columbia Power Commission as of August 1, 1945, has informed its stockholders that it will file an appeal in the courts asking $777,980 more than the $3,462,020 valuation set by the American Appraisal Co.

Col. William Kelly Named to Utility Post in Germany

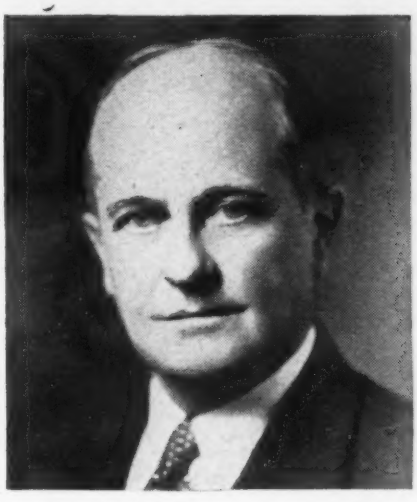
Col. William Kelly will retire January 1 as chairman of the executive committee of the Buffalo Niagara Electric Corp. under the company's retirement plan for its executives. He has been called upon by the government to direct an important phase of reconversion and revitalizing industrial production in Germany and will leave about February 1.

Col. Kelly will become chief of the Public Utilities Section of the Industrial Branch of the Office of Military Government for Germany, replacing Cornelius De Forest, a retired executive of the Columbia Gas & Electric System.

Former president of the Buffalo, Niagara & Eastern Power Corp., Col. Kelly is a distinguished authority on public utilities and electric power. He is ending a 20-year career with the power utilities of western New York, during which he brought western New York's power system to a high peak of efficiency.

Following graduation at the head of his class from the U. S. Military Academy at West Point in 1899, Col. Kelly was commissioned an officer in the Engineering Corps of the United States Army, serving through various grades until 1928, when he resigned from military service. For his service in World War I, he was awarded the Distinguished Service Medal.

Following the war, Col. Kelly served for five years as chief engineer of the Federal Power Commission and was appointed by the federal government as a member of the Joint Board of Engi-



neers, St. Lawrence River project. Going to Buffalo, Niagara & Eastern Power Corp. in 1926 as vice-president in charge of engineering, Col. Kelly was appointed three years later to the position of vice-president and general manager, and in 1933 he was elected president.

He is a fellow of the American Institute of Electrical Engineers and of the American Association for the Advancement of Science and a member of the Society of American Military Engineers.

FPC Claims Jurisdiction Over Maine Public Service

The Federal Power Commission has ordered the Maine Public Service Co. to show cause why, in view of its exports of energy to an electric utility doing business in Canada, it should not be subject to FPC regulation under the Federal Power Act.

The order declares that Maine Public Service transmits electric energy to the Maine & New Brunswick Electric Power Co., Ltd., which operates in New Brunswick, Canada. This activity, FPC contends, requires the commission's authorization, as well as the issuance of a Presidential permit for the operation and maintenance of the international transmission facilities pursuant to Executive Order No. 8202.

Claiming that the Presque Isle utility was notified of these requirements in January, 1945, and in two subsequent letters, FPC says that the company thus far has made no response and also has failed to keep its books in conformance with the commission's uniform system of accounts.

Maine Public Service distributes energy in Presque Isle and other Maine communities and also furnishes power at wholesale to a number of electric utilities operating in that state.

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REA Maintains Interest in Farm Communications

Though prospects for legislation providing federal support for rural telephone service during the next session of Congress are exceedingly slim, the Rural Electrification Administration still maintains a keen interest in farm communications.

This interest was evidenced at a conference held last week in Washington by REA and American Telephone & Telegraph Co. engineers at which various methods for rendering telephone service in rural areas were discussed. The topics included the joint use of facilities owned by REA-financed electric cooperatives for both power and telephone services, the much-discussed carrier telephone, and other methods of cooperation between the co-ops and local telephone companies.

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120,000 Kw. Will Be Added

Philadelphia Electric Co. will add two 60,000-kw. units to its Barbadoes Island steam plant in the Schuylkill River at Norristown. The plant now has a capacity of 45,000 kw.

Ohio Utilities Will Assist in Program for Farmers

A farm electrification committee representing nine Ohio electric utilities will cooperate with the Agricultural Engineering Department of Ohio State University during 1947 to conduct an educational and informational program dealing with the farm use of electricity.

Robert E. Johnson, farm electrification director of the Toledo Edison Co., is chairman of the group, and the committee includes representatives of Central Ohio Light & Power Co., Cincinnati Gas & Electric Co., Columbus & Southern Ohio Electric Co., Dayton Power & Light Co., Greenville Electric Light & Power Co., Ohio Edison Co., Ohio Power Co., and Ohio Public Service Co.

The program will include a series of advertisements in Ohio farm publications and community newspapers; preparation of news copy and feature material dealing with electrical farm equipment, and plans for farm electrical devices to be sent directly to farmers and farm groups; direct support of the state and county fairs in Ohio, and provisions for informational service by the companies to the farmers in their areas.

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Winnipeg to Add Unit

Winnipeg Electric Co. will add another 50,000-hp. unit at its Seven Sisters Falls hydro plant on the Winnipeg River. The present capacity of the plant is 62,500 hp. Cost of the new unit and of the development work on the river and reservoir will be $4,000,000.

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Tax Exemption Permissible

Alabama municipalities are authorized to issue a franchise to electric power plants with provisions for exemption from city taxes, Attorney General William N. McQueen has ruled. However, the land on which the plant is located cannot be exempted from city taxation.

Fight for FPC Rate Study in Arizona Being Pressed

Governor Influences Corporation Commission to Bid Federal Staff Despite Case Pending in Courts

The long drawn-out battle over making a survey of Arizona public utility electric rate structures by the Federal Power Commission still is a long way from being settled (ELECTRICAL WORLD, October 8, Page 122).

Gov. Sidney P. Osborn, who was instrumental in getting the state legislature to appropriate $50,000 for such a survey, recently entered the battle again by meeting with the three members of the Arizona Corporation Commission to force an invitation to the Federal Power Commission.

Governor Osborn succeeded in that move as Yale McFate and W. J. Eden, commissioners, formally adopted a resolution requesting the federal commission "to make available at the earliest practicable date the services of trained personnel for the purpose of conducting a rate survey of all gas and electric utilities" in conformance with the power survey bill of the 17th legislature.

The action of the two commissioners overrode the continued opposition of Wilson T. Wright, commission chairman. The action was taken after receipt of a written opinion from John L. Sullivan, state attorney general, who advised the commission that it has "full authority to incur obligations and to expend the funds appropriated to it," notwithstanding a pending suit attacking the constitutionality of the $50,000 appropriation.

FPC Men There Year Ago

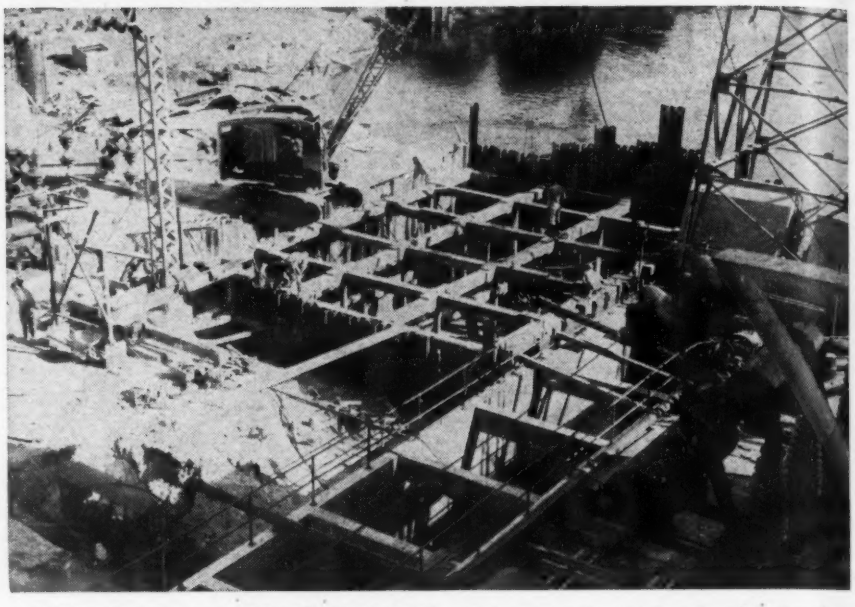
Federal Power Commission men were in Phoenix nearly a year ago to start the rate study but were withdrawn and assigned to projects elsewhere after opponents of the project opened a battle to force a referendum at the state's general election on the rate survey appropriation bill. They carried that fight to the U. S. Supreme Court and lost.

Now, however, the Federal Power Commission apparently has "cooled off" on making the survey.

Leland Olds, FPC chairman, informed McFate in a telephone conversation that before any step is taken by his agency he wants FPC's legal staff to study the opinion by Sullivan.

But it is assumed by McFate that if the appropriation is found valid, as Sullivan contends, the FPC experts will be sent.

There have been reports that the legislature might repeal the act appropriating the $50,000 and set up funds for activation of a full-scale, adequately staffed public utilities division under control of the state corporation commission.



ADDITION TO STATION—Piling is being driven for the intake chamber for the addition to the Inglis plant of Florida Power Corp. where a 30,000-kw. unit is to be installed. The plant will burn oil or pulverized coal

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Utility Holds Sales Clinic

Minnesota Power & Light Co. recently held its first post-war sales and service clinic. All domestic and commercial uses of electricity were studied. The company plans to continue merchandising electrical appliances and equipment, but has extended and strengthened its dealer coordination plan for allied effort.

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10-Year Franchise Granted

Residents of Excelsior Springs, Mo., recently voted 12 to 1 to grant the Missouri Power & Light Co. a new ten-year franchise and defeated a proposal that the city operate its own electric plant and system.

MEETINGS

Previously Listed

Canadian Electrical Association—Winter conference. Chateau Frontenac, Quebec, January 13-15.

Agricultural Development Clinic—Fairmont Hotel, Fairmont, W. Va., January 24-25.

American Institute of Electrical Engineers—Winter meeting, New York, January 27-31.

Electrical Engineering Exposition—71st Regiment Armory, New York, January 27-31.

Mass Picketing in Jersey Now Subject to Injunction

Mass picketing that denies access to property is equivalent to seizure and is subject to injunction, the New Jersey Court of Errors and Appeals has ruled in a case growing out of picketing at the Bloomfield plant of Westinghouse Electric Corp. by striking members of the United Electrical, Radio & Machine Workers of America, C.I.O.

The state's highest tribunal unanimously upheld the validity of New Jersey's anti-injunction law but ruled that Vice Chancellor John O. Bigelow had acted properly in restraining mass picketing at the plant.

Chancellor Bigelow had declared the anti-injunction law unconstitutional, had limited the number of pickets at the plant to 25 and had enjoined the blockading of the entrances and exits to the plant.

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Utility Raising Capacity

The Public Service Co. of Oklahoma is expanding the capacity of its Tulsa steam plant to 83,000 kw. by the addition of a 30,000-kw. unit scheduled to go into operation May 1, 1947.

•

Sells Water Properties

Illinois Power Co. has sold to the Illinois Cities Water Co. its interest in the water properties at Mt. Vernon and Edwardsville, Ill., for about $700,000.

NEWS ABOUT PEOPLE

Mississippi Utility Assigns New Duties to Fountain

J. B. Fountain, who has served for the past several years as assistant general superintendent of the Mississippi Power & Light Co., Jackson, Miss., has been appointed engineering superintendent of the company. In his new capacity, he will be responsible for all electrical and civil engineering functions of the company.

Mr. Fountain has been associated with Mississippi Power & Light since

J. B. FOUNTAIN

1928, when he started as a student engineer at Vicksburg. Since that time he has held a number of responsible positions in engineering operations.

A graduate of the Mississippi State College School of Electrical Engineering, Mr. Fountain is active in the Mississippi Society of Professional Engineers.

•

▶HAROLD C. DEAN, vice-president of the Consolidated Edison Co. of New York, has been appointed a member of the Board of Education by Mayor William O'Dwyer of New York.

▶PAUL L. HEATH has been appointed manager of the Electric League of Western Pennsylvania. Mr. Heath joined Westinghouse Electric Corp. in Pittsburgh in 1945 as field supervisor of the better homes department in the central district, embracing seven states. During the war, he held various positions with federal and state agencies concerned with war housing. Earlier in his career Mr. Heath was connected with the Metropolitan Edison Co. at Reading, Pa., where he engaged in appliance sales work. Moving up through a General Electric distributing agency in Harrisburg, he joined the Pennsylvania Power & Light Co., setting up the electric home promotion department for that company. His background in architecture and building, combined with his knowledge of the appliance industry, qualify him well for his new position.

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San Diego Utility Elects L. M. Klauber President

(See Front Cover)

In a move to reassign executive responsibility, due to community growth and a general expansion of company operations, L. M. Klauber, vice-president and general manager of the San Diego Gas & Electric Co., has been made president of the company by action of its board of directors.

Mr. Klauber succeeds Hance H. Cleland, who was in turn elected to the newly created office of chairman of the board of directors, a full-time position. Mr. Cleland will continue to take an active interest in company and civic affairs.

Mr. Klauber went to work for the company in 1911 as an electric sign salesman. In succession he was placed in charge of the company's engineering department, then made superintendent of the electric production and distribution departments, assistant general superintendent, general superintendent, vice-president in charge of operations and last, in April, 1941, he was elected vice-president and general manager.

Active in technical and scientific societies, Mr. Klauber is a past-president of the Pacific Coast Electrical Association and the Pacific Coast Gas Association. He was honored by the University of California with a law degree for "achievement in engineering and science." A native of San Diego, Calif., he was graduated from Stanford University in 1908 with an A.B. degree in electrical engineering. After graduation he completed a Westinghouse graduate apprenticeship in Pittsburgh.

I-T-E Circuit Breaker Co. Makes New Appointments

Announcement has been made by the I-T-E Circuit Breaker Co., Philadelphia, of the appointment of J. F. Getz

J. F. GETZ

as assistant to the president and of Harry L. Buck as treasurer. Until recently Mr. Getz was manager of switchgear sales and Mr. Buck was assistant general manager in charge of special products division.

Following graduation from Pennsyl-

H. L. BUCK

vania State College, Mr. Getz became identified with the General Electric Co., remaining with that organization from 1935 until 1943. He left General Electric to become sales manager of Roller Smith Co., and held that position until

1944, when he joined I-T-E Circuit Breaker Co. as manager of the Washington office. In 1945 Mr. Getz returned to the home office of I-T-E in Philadelphia to become manager of switchgear sales.

Mr. Buck became associated with Day & Zimmermann Inc., after graduation from Drexel Institute of Technology in 1934. The following year he entered the sales department of I-T-E and was appointed assistant to the president, W. M. Scott, Jr., in 1944. One year later, as assistant general manager of special products division, he took charge of producing stainless steel assemblies for turbo-jet engines, radar antennas and other stainless steel applications.

•

E. A. Yates Made Chairman of Georgia Power Co.

Eugene A. Yates, a pioneer in the development of the hydroelectric resources of the Southeast, has been elected chairman of the board of directors of the Georgia Power Co., succeeding the late Preston S. Arkwright. G. H. Bourne, of New York, comptroller of the Commonwealth & Southern Corp., was elected a member of the board of directors to fill the vacancy caused by Mr. Arkwright's death and C. B. McManus, assistant to the president and a member of the board of directors, was elected a vice-president.

Mr. Yates has been a member of the Georgia Power Co.'s board since 1932 and a vice-president of the company since 1931. He is also vice-president of Commonwealth & Southern. Going to Alabama in 1911 as chief engineer of the Alabama Power Co., he planned and supervised the construction of the big hydroelectric plants in that state. As general manager of the Alabama Power Co. and of the Southeastern Power & Light Co., he was closely associated with the rapid expansion of the electrical business throughout this area. Shortly after the formation of Commonwealth & Southern, Mr. Yates was elected a vice-president, in general charge of the operation of the Southern companies, including Georgia, Alabama, South Carolina, Mississippi and Gulf power companies. Before going to Alabama, he did engineering work with the Pennsylvania Railroad, participating in the construction of the railroad tunnels into New York City.

His headquarters for the present will remain in New York. Active management of Georgia Power Co. will remain in the hands of William E. Mitchell, president since 1945.

G. T. Bryant Made Manager Major Appliance Sales

Announcement has been made of the appointment of George T. Bryant to the position of manager of major appliance sales of the Graybar Electric Co., with offices at the company's executive headquarters in New York. Mr. Bryant will direct the major electrical appliance distribution and dealer merchandising programs now in operation at Graybar locations in key cities throughout the country.

G. T. Bryant

Mr. Bryant joined the Graybar organization in 1935 at Southern district headquarters in Atlanta. At the start of the war he served the Office of Price Administration in Washington as chief of the trade relations branch, retail trade and services division. Later he was moved to the Foreign Economic Administration Office as chief of the fabricated goods division. He rejoined Graybar in 1944 and has served until now as assistant merchandising sales manager at executive headquarters in New York.

OBITUARY

► William H. Lyons, 80, first president of the Massachusetts Gas & Electric Light Association, a pioneer in the establishment of central station service in Mansfield, Mass., and for 15 years a Commissioner on the lighting board of that municipality, died at Mansfield on December 8.

► George W. Welsh, manager of the Union Electric Co.'s East St. Louis and Alton, Ill., divisions, died of a heart attack, at the Missouri Athletic Club, in St. Louis on November 26. He was 65 years of age. A native of Hanover, Pa., Mr. Welsh became an electrical engineer for the East St. Louis & Suburban Railway in 1914. He later advanced to general manager of that system and its affiliated electric power company when it was taken into the Union Electric System. At the time of the merger, he was made manager of the East St. Louis and Alton divisions.

► Dr. George L. Hoxie, research engineer, who retired from the Southern California Edison Co. in July, 1938, died in Los Angeles November 14. Dr. Hoxie was born in Leonardsville, N. Y., in 1872, and received his degree in engineering and his doctor's degree at Cornell University. He was a professor at the University of Arizona and an instructor in electrical engineering at Cornell before beginning an engineering practice. He joined the Edison company in 1920 and was the author of several technical books on engineering and business.

► James Orr, some years ago construction superintendent of the old Toronto Electric Light Co. and in more recent years connected with the Toronto Hydro-Electric System, died at his home in that city on November 5. Born in Scotland 98 years ago, Mr. Orr went to Canada more than 60 years ago and had supervision of the construction of poles and all outdoor service for the Toronto Electric Light Co. He had been retired for some time.

► Henry C. Kennedy, electrical engineer of Montreal, Que., died suddenly at his residence in that city on November 10. He was 61 years old. Born in Owen Sound, Ont., Mr. Kennedy, following service in World War I, became resident engineer on hydro construction with the Bathurst Lumber Co. and in 1921 joined William Kennedy & Sons Limited, becoming local representative and a director. In 1941 he was appointed inspection engineer for the Controller of Steel for the Dominion Government.

► John J. Kane, general patent attorney for the Allis-Chalmers Manufacturing Co., Milwaukee, Wis., died on November 8. A patent attorney for Allis-Chalmers since 1912, Mr. Kane became head of the company's patent department in 1944. Before going to Allis-Chalmers, Mr. Kane had been in the United States Patent Office, Washington, D. C., for six years. Mr. Kane was a past-president of the Milwaukee Patent Law Association and a member of the American Institute of Electrical Engineers, the American Patent Law Association and the American Bar Association.

PART 3 IN A SERIES ABOUT *Quality Craftsmanship* AT LINE MATERIAL

Tap Changer Construction of L-M Round-Wound Transformers

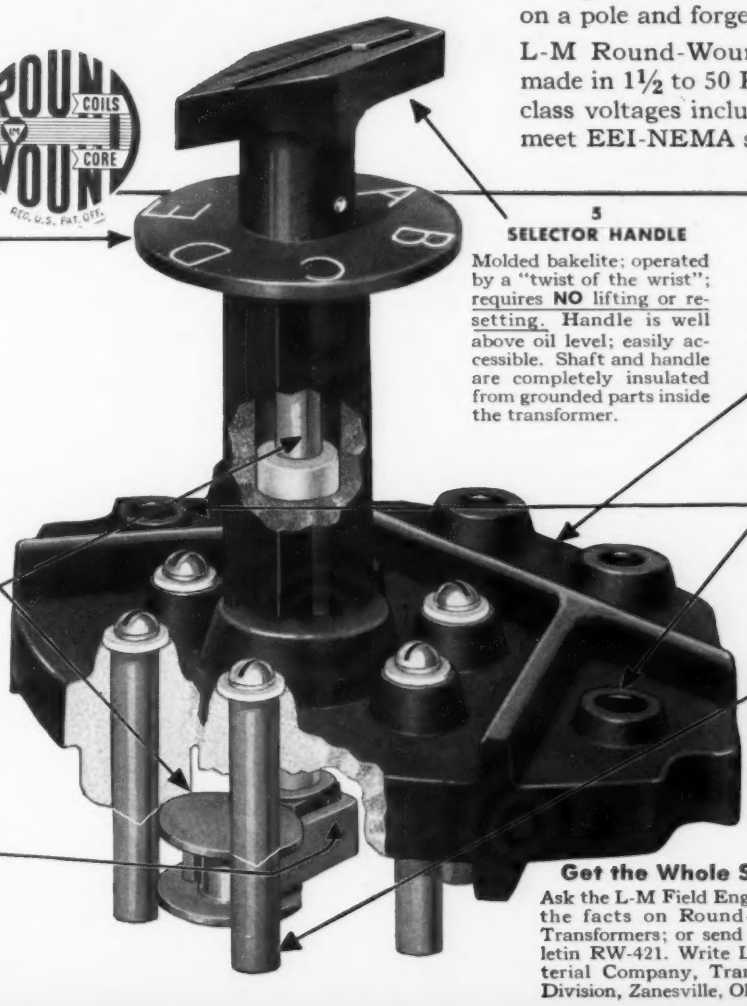
A mere "twist of the wrist" changes contacts with positive snap-action on this convenient, combination tap changer and terminal board.

The "Quality Craftsmanship" standards under which L-M Round-Wound Transformers are built may be verified down to the last detail of their construction.

For example, check the features of the L-M tap changer. It is typical of the kind of design and construction that goes into L-M Round-Wound Transformers. It is another reason why you can "hang L-M Round-Wound Transformers on a pole and forget 'em."

L-M Round-Wound Transformers are made in 1½ to 50 Kva, in all distribution class voltages including 14,400 volts, and meet EEI-NEMA standards.

ROUND COILS WOUND ON CORE
REG. U.S. PAT. OFF.



1 INDICATOR PLATE

Bakelite, molded in one piece with shaft housing, which is notched to porcelain base to prevent turning of plate. Plate is well above oil level; large white letters are easily seen.

2 BRASS ROLLER

Revolves from one set of contact posts to the next when the handle is turned. The spring-actuated roller provides a high pressure wiping action as it snaps to each contact.

3 SHAFT

Accurately machined shaft transmits torque from handle to roller arm. Fibre shaft extension raises handle above oil level and insulates it from grounded parts inside the transformer.

4 STEEL SPRING

Acts on the brass roller, providing positive pressure contact and snap-action with the turn of the selector handle.

5 SELECTOR HANDLE

Molded bakelite; operated by a "twist of the wrist"; requires **NO** lifting or resetting. Handle is well above oil level; easily accessible. Shaft and handle are completely insulated from grounded parts inside the transformer.

6 PORCELAIN BASE

High density porcelain molded under high pressure by a new process into a single piece. Barriers between live parts and between live parts and ground afford adequate creepage distances at all points. High Dielectric and mechanical strength and close dimensional tolerances are characteristic.

7 PRIMARY LEADS

May be terminated on the tap changer base. Barriers assure complete safety from flashover. Thus, tap changer and terminal board are combined into one assembly.

8 BRASS CONTACT POSTS

A finished machined surface for positive contact. Square heads engage square recesses in the porcelain base to keep contact posts from turning in operation.

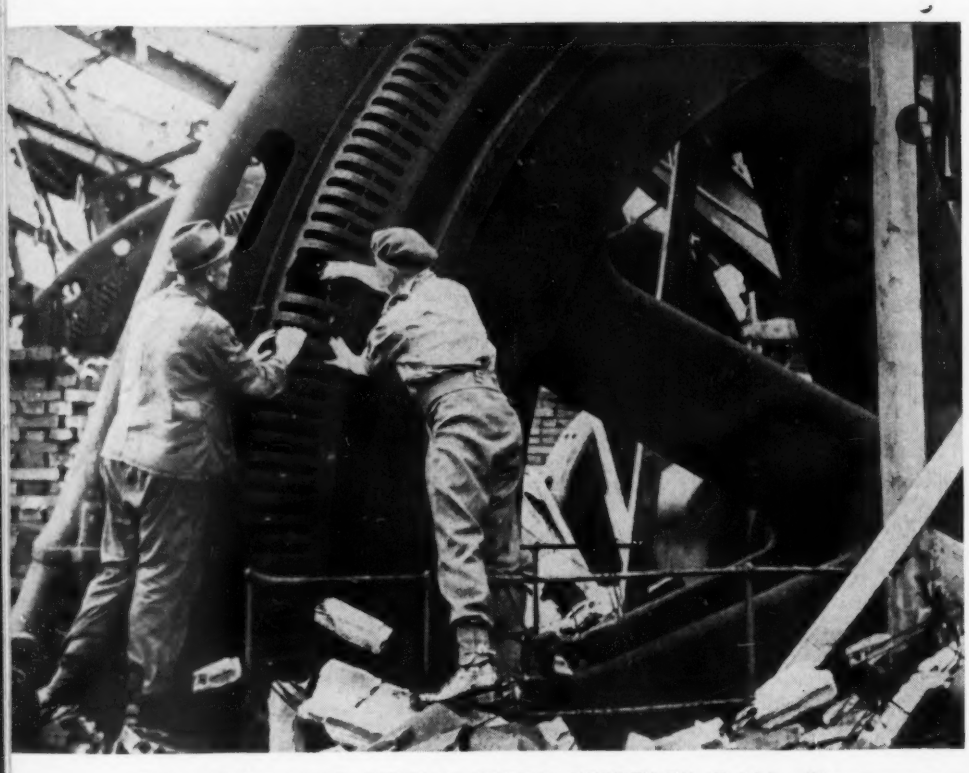
Get the Whole Story

Ask the L-M Field Engineer for the facts on Round-Wound Transformers; or send for Bulletin RW-421. Write Line Material Company, Transformer Division, Zanesville, Ohio.

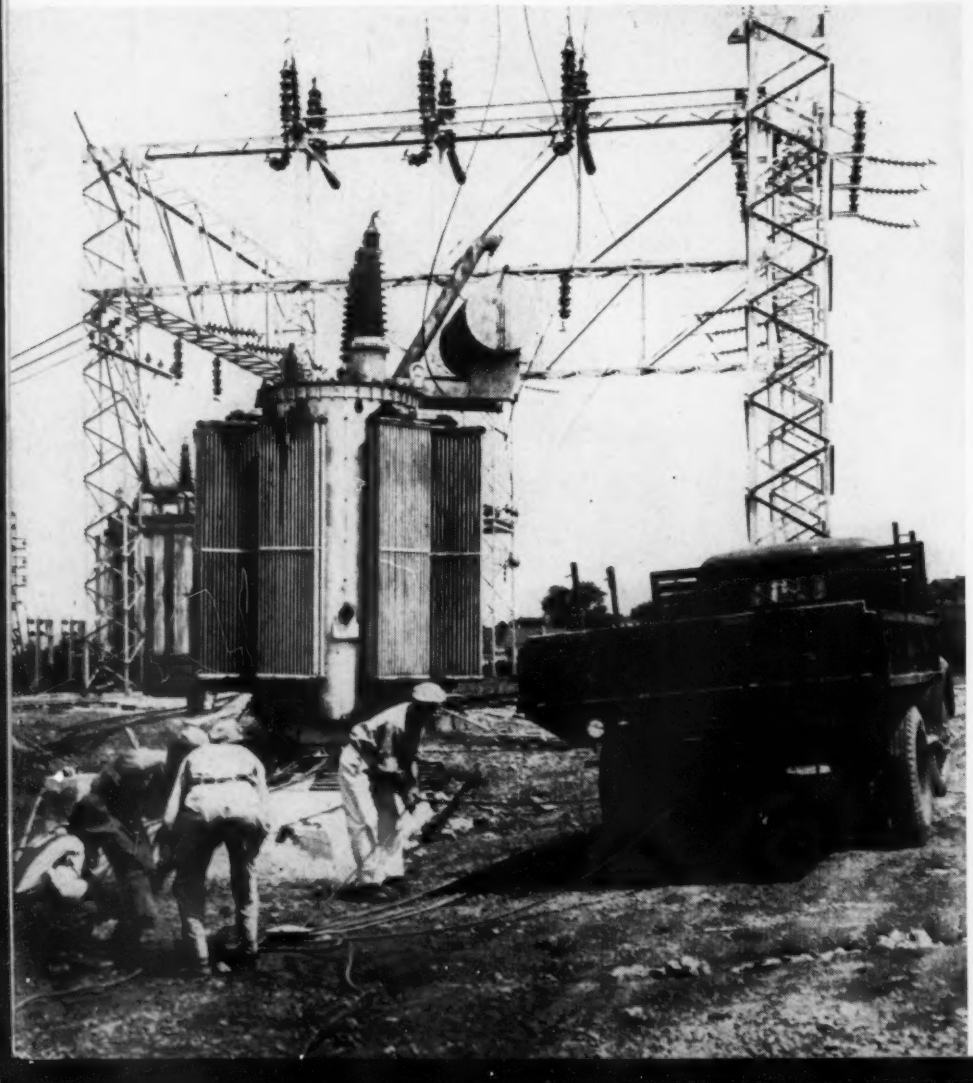
LM

LINE MATERIAL TRANSFORMERS

L-M DISTRIBUTION EQUIPMENT INCLUDES: Distribution Transformers • Fuse Cutouts and Fuse Links • Lightning Arresters • Oil Switches • Pole Line Hardware • Line Construction Specialties • Underground Equipment • Fibre Conduit • Street and Airport Lighting Equipment • Wired Radio Control Equipment • Capacitors



ONE REASON FOR GERMAN POWER SHORTAGE—British officer inspects a damaged generator in the British zone in Germany. Worn-out equipment, installations damaged by bombing, and coal shortages have cut German output



INCREASING DECEMBER LOAD—Los Angeles Bureau of Power & Light has 25 community Christmas lighting projects with a total of 1,700-kw. connected load. This Hollywood Boulevard installation consists of 100 all-metal trees, each with 175 colored bulbs, in addition to other lighting decorations with a total load of 630 kw.

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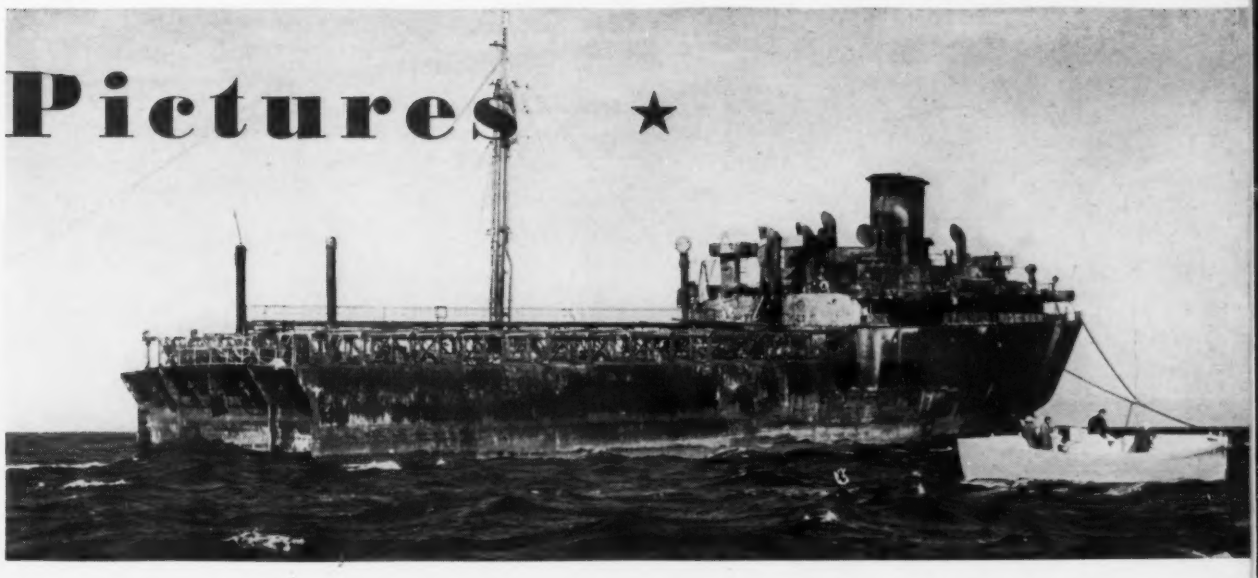
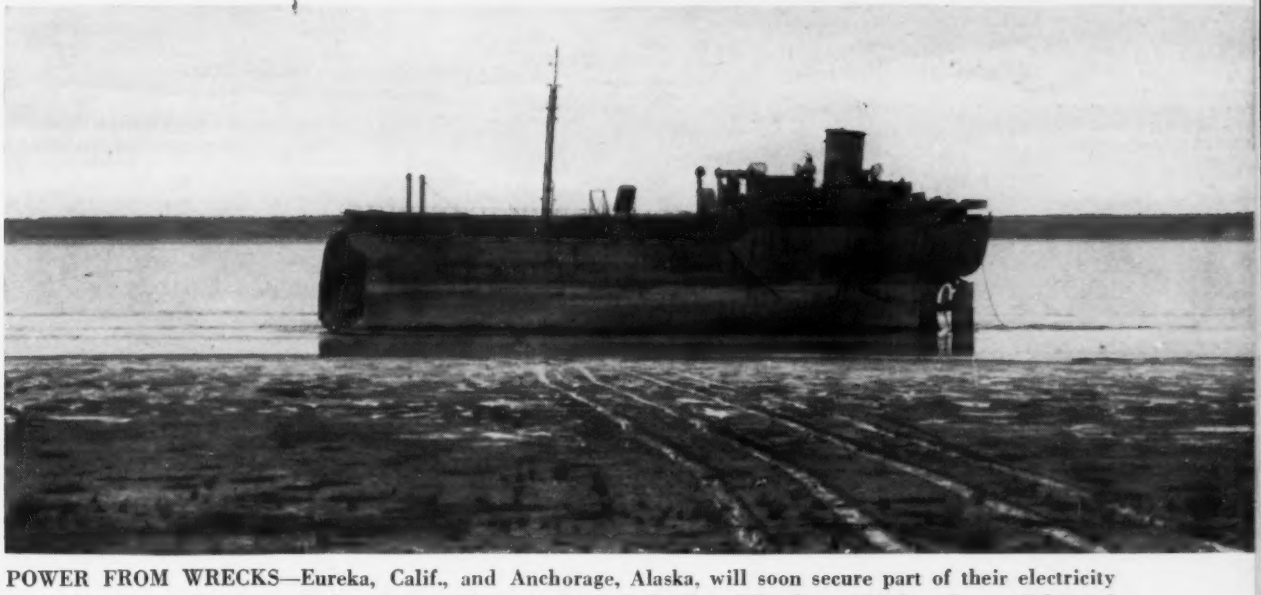
MOVING DAY—A crew moves one of three 53.5-ton transformers 130 ft. to a new concrete foundation as part of the program to modernize facilities at Red Mountain substation of Birmingham Electric Co. These transformers were unloaded from freight cars 20 years ago and were hauled to the substation on improvised tracks

Pictures ★





POWER FROM WRECKS—Eureka, Calif., and Anchorage, Alaska, will soon secure part of their electricity from the plants of two wrecked tankers. Above is the *S. S. Donbass III,* whose 6,700-hp. plant will be tied into the Pacific Gas & Electric Co. system at Eureka. Below is the *S. S. Sackett's Harbor,* whose 6,000-hp. plant will provide power for the Anchorage municipal system as soon as a mooring basin is constructed

GIFT TO EAT—Following its annual custom, Northern States Power Co. bought a 4-H club baby beef and presented it for the main course of a county-wide achievement dinner. This year the beef was served to 4-H members of Stearns County, Minn. E. K. Thorgaard, division manager of the utility at St. Cloud is in center

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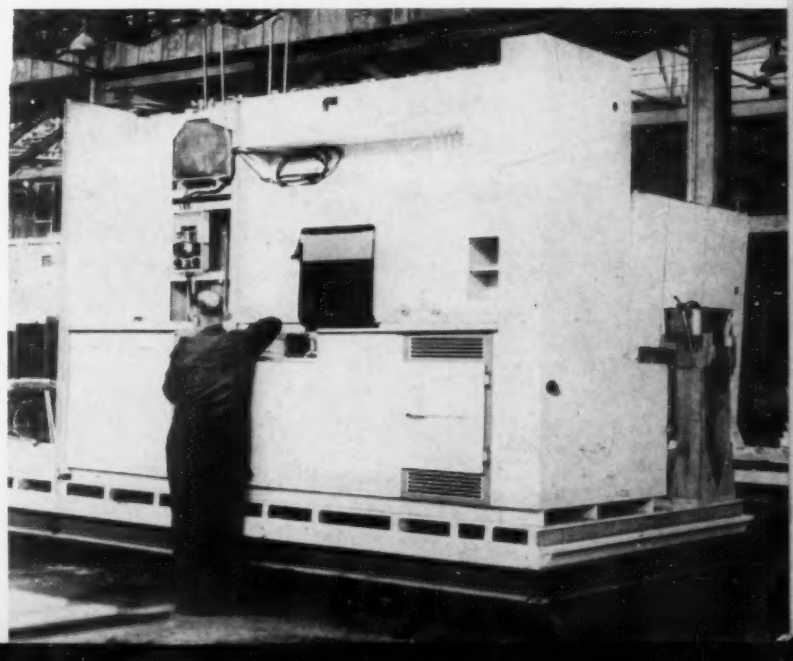
THE BRITISH TOO—Similar to the combined kitchen-heating-bath units now being manufactured in the United States is this unit for a prefabricated aluminum house



Costs must be lowered and voltage regulation improved to economically serve the growing loads in the "in-between" area—average residential areas where the load is not heavy enough to justify a network system, yet heavier than in light residential or rural areas. The Westinghouse CSPB Transformer for banked secondary operation is the answer to this problem.

All the benefits of banked secondary service are provided by CSPB Transformers without the disadvantages of conventional banking. Installations to date show reductions in transformer capacity of as much as 35% and a material saving in equipment costs.

Voltage regulation is improved . . . light flicker controlled . . . sectionalizing protection is assured without the use of fuses or danger of cascading . . . full thermal capacity of *all* transformers is always available.

Get the full story of CSPB advantages—ask or write for booklet B-3777. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

FOR RADIAL DISTRIBUTION—CSP

The Westinghouse CSP Completely Self-Protecting Transformer provides these fundamental features needed for conventional radial circuits: **Overload and Short-circuit Protection** with built-in co-ordinated breaker; **Lightning Protection** with "De-ion" arresters; **Line Lockout Protection** with high-voltage protective links; **Better Regulation, Lighter Weight** with Hipersil cores.

J-70485

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERY[illegible]

CSPB DB

DISTRIBUTION TRANSFORMERS

SEC RULINGS

The Securities and Exchange Commission recently issued a series of orders affecting electric utility companies.

COMMONWEALTH & SOUTHERN CORP. has been authorized to pay a dividend of $3 a share, or an aggregate of $4,417,800, on its preferred shares outstanding on October 31. (Release No. 7073).

OHIO POWER CO.'s proposal to purchase up to 12,500 shares of the $100 par value capital stock of its wholly owned non-utility subsidiary, Central Ohio Coal Co., has been approved. The shares are to be purchased at par from time to time prior to December 31, 1947, and the subsidiary will use an estimated $980,000 of the funds thus received for additional mining equipment and $270,000 for working capital. (Release No. 7031).

BIRMINGHAM ELECTRIC CO.'s proposal to refinance its outstanding preferred stock through the issuance, exchange and sale of new preferred stock and the issue and private sale of serial notes has been approved. Under the authorized program Birmingham will issue 64,000 shares of 4.2 percent cumulative preferred stock of $100 par value per share. Forty-thousand of these shares together with cash will be offered in exchange, share-for-share, for $7 and $6 preferred stocks. The remainder, together with shares not taken in exchange, will be sold at competitive bidding. Shares of the presently outstanding preferred not tendered for exchange will be redeemed at $110 per share. Birmingham Electric also intends to sell privately $2,500,000 of 2 percent ten-year serial notes payable in equal semi-annual installments. The company will use the net proceeds from sale of the securities, aggregating $4,700,000, to improve its properties. (Release No. 7033).

CENTRAL STATES POWER & LIGHT CORP.'s proposal to extend the maturity date of its 5 percent debentures from next January 1 to January 1, 1948, has been approved by the commission, which ruled that the plan is necessary "to the integration or simplification of the Ogden Corp.'s holding company system, of which Central States is a member, and to effectuate the provisions of Section 11 (b) of the act." (Release No. 7039).

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Benefit Group Liquidates

Members of the defunct Virginia Electric & Power Co. Benefit Association will share in the distribution of $51,775.79, its remaining assets, as a result of the liquidation of the association brought about by a recent court order. Records show that 2,083 members will receive varying sums.

In 1945, the utility changed to another type of employee benefit system and on May 2, 1945, gave notice that it would no longer contribute to the association and that employees were no longer bound to contribute. Contributions ceased after June 30, 1945.

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September Electric Energy Sales Rise 9.8 Percent

Sales of electric energy to ultimate customers in September, 1946, totaled 16,357,524,000 kw.-hr., compared with 14,895,243,000 kw.-hr. in September, 1945, an increase of 9.8 percent, according to the report issued by the Edison Electric Institute.

Classification of Sales, September 1946 and Change from 1945

Kilowatt-hour sales September	Million Kw.-Hr. 1946	1945	% Change
Residential or domestic....	3,018	2,693	+12.1
Rural (District rural rates)	489	383	+27.8
Commercial or industrial			
Small light & power.....	2,825	2,477	+14.0
Large light & power.....	8,800	8,028	+ 9.6
Street & highway lighting..	184	175	+ 5.3
Other public authorities...	455	562	—19.0
Railways & railroads			
Street & interurban.....	336	333	+ 0.8
Electrified steam railroads	201	200	+ 0.6
Interdepartmental	50	45	+12.1
Total to ult. customers..	16,358	14,895	+ 9.8

Revenue from ultimate customers amounted to $288,041,300 in September, compared with $267,943,400 in September, 1945, an increase of 7.5 percent.

For the twelve months ended September 30, 1946, the average use per customer advanced to 1,306 kw.-hr. from 1,202 kw.-hr. for the preceding year, an increase of 8.7 percent; the average annual bill to $42.71 from $41.47, an increase of 3.0 percent; revenue per kilowatt-hour dropped from 3.45 cents per kilowatt-hour to 3.27 cents per kilowatt-hour, a decrease of 5.2 percent.

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Power Association Elects

Paul Griffith, Arkansas Power & Light Co., has been elected president of the Petroleum Electric Power Association. Other officers will be Lon Watson, Southwestern Public Service Co., Amarillo, Tex., vice-president; and C. L. McNeese, Houston Lighting & Power Co., secretary-treasurer. B. F. Thomson, Public Service Co. of Oklahoma, was elected a director.

Figures Late; No Chart

The chart showing the production of electrical energy during the preceding week, which regularly appears on this page, is omitted this week because of inability to get figures in time for publication.

3 Groups Share Dividend of Hartford Electric Light

Over $500,000 will be shared by customers, employees, and stockholders of Hartford Electric Light Co. in a December "customers' dividend," resulting, according to President Austin D. Barney, from abnormally heavy consumption of electrical energy, coupled with the fact that plant expansion with its corresponding capital investment has been retarded during the past five years because of war restrictions on materials.

All customers will receive a 45 percent discount on December bills, which amounts to about $381,000; employees will get an additional 45 percent on their month's earnings, totaling about $117,000; and stockholders will receive about $86,000 on February 1, 1947, or 45 percent of one month's regular dividend (payable to stockholders of record at the close of business January 15). This will be the company's thirteenth customer dividend, which with its predecessors has saved customers about $4,000,000. For 1946, the August 1 rate reduction, added to the forthcoming dividend to users of service, will bring the total savings to customers for this year to about $600,000.

•

October Energy Production Advances 14.3 Percent

Production of electric energy for public use during October, 1946, totaled 20,187,843,000 kw.-hr., according to a report issued by the Federal Power Commission. This is an increase of 14.3 percent over October, 1945, and is only 0.5 percent under the record amount set in January, 1945.

Combined utilities and industrial production was 24,387,917,000 kw.-hr. during October, an increase of 13.6 percent above October of last year.

Average daily production of electric energy for public use in October was 693,740,000 kw.-hr., an increase of 1.1 percent in comparison with the average daily production during the previous month, and an increase of 14.3 percent over October, 1945. Production by water power in October amounted to 6,257,047,000 kw.-hr., or 31.0 percent of the total output for public use.

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Utilities Bills Taxed

Sarasota, Fla., has placed a tax on consumers' utilities bills at the rate of 10 percent on the first $25, 5 percent on the second $25, and 1 percent on each additional $50.

MANUFACTURERS & MARKETS

New Products, Materials, Component Parts To Be Featured at Electrical Exposition

Displays in the forthcoming Electrical Engineering Exposition to be held in the 71st Regiment Armory, New York, concurrently with the winter convention of the American Institute of Electrical Engineers, January 27-31, will feature the new equipment available in the field of power generation, transmission, distribution and utilization, E. K. Stevens, manager, made known this week. Also to be seen will be the newer materials utilized in the apparatus as well as the latest designs in component parts.

One of the booths will feature silicones. It will include demonstrations of some of the recent achievements with this family of materials, forecasting their expected influence on electrical designs of the future.

Induction Heating Featured

Another field of electrical engineering development, induction heating, will also figure among displays at the Armory. The application shown will be designed for use in the high-pressure steam lines of central stations. Associated with this exhibit will be a new heat cycle program control system which has been developed for the precision control of pre-heating for welding and also for normalizing after welding operations. In the same exhibit will be an original type of transformer arc welding machine and a gasoline-driven outfit for arc welding work in the field.

On the technical side of the Exposition will be a number of instruments and control systems which are new or just emerging from reconstruction and improvement of the original designs. One of these lines includes motor-driven timers, oil-filled condensers, mechanical and electric counters, snap-action switches, sensitive relays, fixed thermostats and mercury contactors.

What is said to be "the first really portable oscilloscope"—miniature and light—will have its first showing at the show. This instrument was first produced only four or five months ago. Among several other new creations in test equipment will be a new wattmeter, also to be shown for the first time.

An electric tachometer, promised by one of the exhibitors, is said to be the first to combine all of the following features: a driving torque as low as 1/50 oz.-in., for measuring speeds as low as one-fourth of one revolution per minute, and multiple head units, with as many as four ranges on one instrument.

Among other displays in the general field of distributing equipment is a new multi-outlet device for power distribution which is both efficient and safe to operate; and a unique connector, proved out in war-time welding operations but now finding new applications because of its efficiency and rapid operation.

There is also a new device for splicing loops and full tension copper and ACSR overhead lines, as well as a new connector which provides means for tapping self-supporting aerial cable while "hot."

A three-conductor insulated parallel gutter tap, which equalizes two cables and permits a third to tap off at the same junction; and a heavy-duty gutter tap in the form of a unit assembly complete with bolts, nuts and lock washers will be shown in another display. At still another booth will be a combination connector designed for use either as a T-tap or a parallel tap, with each fitting capable of taking a wide variety of sizes.

New guy clamps, having increased holding grip and decreased installation cost; aerial messenger clamps as applied to self-supporting cable construction and transformer mounting plates for remounting older type transformers by an economical method, constitute another display.

A line of equipment having wide application in building alterations, as well as new construction, is a surface raceway system for wiring, which includes a line of lighting equipment. One application of this system is a pre-wired continuous outlet system. Now included in the same line is a series of fluorescent lighting units with ballast enclosed in the raceway, forming a neat type of installation.

Among other innovations will be a line of transformers for all classes of service distribution—power, metering,

"FOR OUTSTANDING CONTRIBUTIONS"—Frank M. Folsom, executive vice-president, Radio Corp. of America, in charge of the Victor Division, received from Col. Benjamin Stern, Commanding Officer of the Signal Corps Procurement District of Philadelphia, a Certificate of Appreciation conferred on him by the War Department for outstanding contributions to the program of the U. S. Army Signal Corps carried on during World War II

testing and street lighting. These units are oil, Askarel or air cooled, according to specification. There will also be a standard distribution transformer having a new design of tap-changing switch.

Oil-immersed motor control equipment, including across-the-line starters, reduced voltage starters, safety switches, pushbutton drum switch, float switch and lighting switch types—all designed for use in hazardous, semi-hazardous, corrosive and dusty locations—comprise still another display.

A new method of using circuit breakers in outdoor service entrance equipment, and a positive protection for electrical circuits and instruments, machinery and electrical apparatus in general are to be shown at still another booth.

Another appropriate display will be that of a line construction motor truck, vehicle and equipment, designed and built entirely under one roof following several years' study of line construction work actually going on in that field. This truck is fully equipped and arranged to facilitate carrying on construction work.

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McKiernan-Terry Corp. Takes Over Mead Morrison

Business, key sales and engineering personnel of the Mead-Morrison division, Robins Conveyors, Inc., has been taken over by McKiernan-Terry Corp., 505 Manor Ave., Harrison, N. J. The arrangement covering joint cooperation in carrying out port and harbor facility projects involving bulk-materials handling equipment was concluded on November 1.

Orders now in process will be completed by Robins but all new orders for equipment or spare parts will be handled by McKiernan-Terry. The transfer will not affect Robins' principal line of belt conveyors, vibrating screens, foundry and car shakeouts, skip hoists, boat self-unloader equipment, ore bedding systems, reclaimers, etc.

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ETL Fifty Years Old

Electrical Testing Laboratories, Inc., commonly known as ETL, has recently celebrated its 50th anniversary of service to the industry. The enterprise was founded in November, 1896, by John W. Lieb, Charles L. Edgar, and W. S. Barstow to set up a specification-test procedure for incandescent lamps. The testing organization has grown from this modest beginning to the ETL of today, which still carries on the original conception but on a much broader scale.

Torpedo Motor May Affect Future Conventional Machine Designs

Among the significant war-time developments whose design details will undoubtedly affect conventional machines was the motor used to drive the electric torpedo. One of the problems of this apparatus was to develop a lightweight power plant that could produce enough power, for a short time, to drive the torpedo to its goal, R. E. Kelly, transportation engineer, Westinghouse Electric Corp., told the National Industrial Service Association recently at Charlotte, N. C.

This motor was designed for high temperatures as its expected life is actually only a matter of minutes, he continued. This required brazing the coils to the commutator and treating the armature coils with a synthetic resin that was baked for 18 hours under infrared lamps. Both proved eminently satisfactory in service and can be expected to find expanded use in conventional machines.

Trend to Small High-Speed Units

Another feature of this motor is the design of the commutator. Instead of the conventional barrel type with rectangular carbon brushes riding on a cylindrical surface, the commutator is a flat face-plate and the carbon brushes are prismoidal in shape. The brushholders conform to the shape of the brush and apply spring pressure in a direction parallel to the axis of the shaft. Commutation of high currents with this type of commutator and the odd shaped carbon brush is very good and offers great possibilities especially where longitudinal space is limited, Mr. Kelly continued.

In the design of conventional electrical machinery, industry is moving away from large slow-speed machines toward smaller high-speed units. The reason for this trend, he added, is to save space and weight and to reduce cost. In addition to these higher speeds, there has been a tendency toward higher operating temperatures. The commutator is one of the machine parts greatly affected by both speed and temperature, Mr. Kelly told the association.

All commutators are affected by changes in temperature, since their various parts, steel, copper and mica, all expand at different rates. Since railway motors are operated rather hot, the extra expansion resulting must be taken into account when the commutators are designed. There are three principal design types of commutators, he added, the ring nut, the bolted, and the disc spring. For taking care of expansion due to elevated temperatures, the ring nut is least effective; the disc spring type the most effective; and the bolted type is in between, Mr. Kelly stated.

Another problem that has become increasingly important with today's high-speed machines is that of armature bending. The centrifugal forces that develop in modern armatures are sometimes startling, he continued. A typical traction motor with 22-in. rotor exerts an outward force equal to 1,130 times its weight when operating at 1,900 rpm.

It takes about 3 cu. in. of copper in the armature to make a pound, so for every cubic inch of copper, the centrifugal force is nearly 400 lb. Some of this centrifugal force is held by slot wedges, while the coil ends are held by high-strength steel wire. These bands may be made of either magnetic or non-magnetic material and when replaced should be wound with materials of matching characteristics to preserve the original commutation characteristics, he concluded.

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Two Fuse Units Purchased by Portable Products

Purchase of two manufacturing companies by the Portable Products Corp., Pittsburgh, has been announced by F. R. Marlier, corporation president. The recent acquisitions are the Great Western Fuse Co. and the LaMar Indicating Fuse Corp., both of 7633 Susquehanna St., Pittsburgh. Great Western Fuse Co., established in 1924, has manufactured renewable electric fuses, lag fuses, and similar products, and LaMar Indicating Fuse Corp., established in 1933, has manufactured indicators for fuses.

Mr. Marlier stressed the fact that while Portable has obtained financial control of the companies, they will be operated as subsidiaries with no changes in personnel nor in methods of operation.

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Noma Plans New Appliances

Plans are being made by the Estate-Heatrola division of Noma Electric Corp. to include in its 1947 manufacturing and sales operations a line of household refrigerators, home freezers, deluxe kitchen cabinets, stainless steel kitchen sinks and electric and gas hot-water heaters, John M. Bess, executive

vice-president of the company's appliance division, has announced. Mr. Bess reported that the company also planned a new 1947 line of Estate electric and gas ranges and Estate-Heatrola space heaters, which will include small gas heaters and gas floor furnaces.

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Manufacturers Make Sales Assignments

Electrical manufacturing companies have recently made the following appointments to their sales staffs:

CUTLER-HAMMER, INC., Milwaukee, has appointed J. P. Simon manager of the Philadelphia district office. He succeeds the late D. J. Quammen. In this position, Mr. Simon will have direct charge of all sales in the Philadelphia territory and will have supervision of the company's branch offices in Baltimore, Md., Washington, D. C., and York, Pa. Because of the rapidly expanding business activity in the southwest, the company has established this area as a new district sales territory. The new arrangement replaces the former branch sales office operation. The new sales district will be under E. K. Anderson as district manager, with headquarters at 715-A N. Ervay St., Dallas. The area includes the states of Texas, Oklahoma, Arkansas and southern New Mexico. J. S. Darby will be in charge of the company's branch sales office in Houston, and will operate under the supervision of the Dallas office.

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, has appointed Albert R. Knauss, formerly of the Tulsa district office, manager of the office at Memphis, Tenn. Ned Landis, formerly a lieutenant commander in the U. S. Navy, has been named branch manager of the Syracuse, N. Y., office. Before joining the Navy, Mr. Landis was associated with the Cincinnati office of Allis-Chalmers. At Syracuse, he succeeds Leonard R. Reid, now in the company's electrical department, main works.

FALK CORP. has appointed L. H. Billing district manager of a newly created sales territory. Formerly production manager at Falk, Mr. Billings directs sales in Wisconsin, upper Michigan and parts of Iowa.

WHEELCO INSTRUMENTS CO., Chicago, has opened a new district sales and service office at 107 South Capitol Ave., Indianapolis, Ind. This office, under the direction of John E. Anderson, will serve the territories consisting of the greater portion of Indiana, western Ohio and Kentucky.

ELECTRICAL ENGINEERS EQUIPMENT CO., Melrose Park, Ill., has appointed John G. Pickett, 25 West 31st St., Kansas City, Mo., district representative in the Kansas City territory.

THE OKONITE CO. has placed John L. Marsh in charge of insulated wire and cable sales in its newly opened sales office at 417 Merchants Bank Bldg., Indianapolis 4, Ind. Mr. Marsh, who recently returned from service in the U. S. Navy, was formerly located in the company's New York office.

Manufacturers Announce Plant Expansion Plans

Westinghouse Electric Corp. has received final approval from the War Assets Administration for the purchase of the plant at Vanport, Pa., operated during the war by the Curtiss Wright Corp. The Westinghouse small de-ion circuit breaker department will move to the new plant from its present location in East Pittsburgh, and J. A. Butts, manager of the department, said preliminary work of preparing the new site will begin at once. There should be some "token" manufacturing underway in January, according to the announcement, but it will take 18 months to two years to work into capacity production. When operations are fully underway, Mr. Butts said, the department will employ approximately 2,000 persons with an annual payroll of about $5,000,000.

Details of a major program of expansion by the Edison General Electric Appliance Co., involving $17,000,000 in working capital and manufacturing facilities, have been announced. In making the announcement, Ray W. Turnbull, president, said expansion of the company's production facilities will more than double employment of the pre-war period. "Production capacity for ranges and water heaters will be multiplied from 2½ to 3 times," Mr. Turnbull said. While present production is equal to the pre-war annual rate, he pointed out that lack of steel is preventing current production from going even higher. Present indications are that 1947 will see a partial achievement of the expanded production goals and that the program will progress still further in 1948.

Cornell-Dubilier Electric Corp. directors have authorized the expenditure of $250,000 for expansion of the company's facilities to meet the growing demand for all types of capacitors. During the fiscal year ended September 30 the company spent close to $1,000,000 for expansion, Octave Blake, president, stated.

Reynolds Metals Co. has acquired the government-owned aluminum rolling mill at Newark, Ohio, from the War Assets Administration. The plant, acquired under a five-year lease with an option to purchase, is composed of 36 buildings on a 300-acre tract of land. Facilities will allow the production of 10,000,000 lb. of aluminum blooms and 15,000,000 lb. of aluminum rods a month.

In order to increase the production of "urgently needed traffic and street lights" demanded by municipalities throughout the nation, the General Electric Co.'s River Works at Lynn, Mass., has been authorized by the Civilian Production Administration to construct an addition to cost $589,764. Regional Director W. P. Homans of the CPA states that his check with public safety officials in several states and municipalities justifies the new construction "in order to relieve the danger to public safety due to currently low delivery of these vital safety guards."

Electro-Voice, Inc., microphone manufacturer, after 19 years in South Bend, Ind., is moving to a new, larger home in Buchanan, Mich. There in one modern factory nearly an acre in size, Electro-Voice combines all the facilities of its three South Bend plants.

Electric Storage Battery Co. has purchased a Chicago war plant from the War Assets Administration, at a price of $1,000,000. The property, located at 5335 South Western Avenue Blvd., consists of approximately seven acres of ground, with buildings containing 183,000 sq. ft. of floor space.

Lasser Mfg. Co. Organized to Make Lighting Fixtures

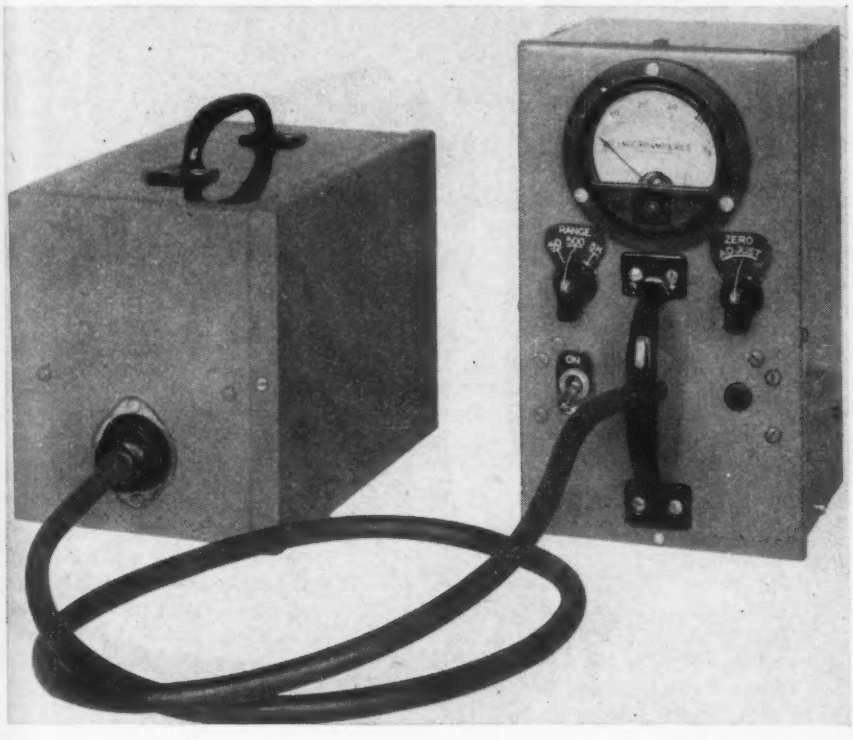
Announcement has been made of the formation of the Lasser Mfg. Co. to produce a complete line of modern fluorescent lighting fixtures and lamps. General offices will be located in Miami, Fla.

J. LASSER

Jack Lasser, founder and president of the Mastercraft Electric Co., Newark, N. J., has resigned from the presidency and sold his interest in the company to start the new organization.

NEW EQUIPMENT

Light Meter Checks Street Light Controls



A NEW LIGHT METER, model 623, which provides a means of measuring relative light intensities of low magnitude in the blue portion of the light spectrum, has been developed by the Barton Co., 968 Farmington Ave., West Hartford, Conn. It employs a blue-sensitive phototube and is reported to give a more uniform response to visible light than is obtained with photo-voltaic cells. It is reported as especially useful in checking the operation of photo-electric lighting controls which employ blue-sensitive phototubes.

The unit is enclosed in a sheet metal case measuring 5 x 9 x 6 in. It operates from batteries contained in a separate steel case for use in the field as well as the laboratory. Light is received through a rectangular window at the back of the case and a zero-adjusting knob is provided to balance the circuit with the window covered.

Three light ranges are provided giving readings up to 50, 500, and 5,000 microamperes of differential current. A calibration chart furnished with the instrument shows north sky light readings in relation to minutes before and after sunset on a normally clear day. At low values of light, each scale graduation represents about twenty seconds at twilight. This calibration permits the adjustment of an artificial light source to represent any desired value of daylight at which a lighting control is required to operate. The control can then be adjusted to operate at this value. When used in the field, Model 623 permits checking the operation of controls under any conditions of weather and sky and interpreting the operating point in terms of normal clear daylight, the company reports.

A light tunnel, Model 622, is available for checking street lighting controls in groups of three for operation at exact values of light in terms of minutes past sunset. This tunnel employs a carefully aged incandescent lamp operating on a constant voltage transformer while selected apertures provide at will known values of light corresponding to specified amounts of daylight. Using several standard apertures, the tunnel alone may be used to check street lighting controls but the Model 623 light meter furnishes a check on the light source at any time.

Mercury Lamp Life Increased 1,000 Hours

INCREASED life ratings for the 400-watt mercury lamps, types A-H1, B-H1, and F-H1, have been announced by Lamp Department, General Electric Co., at Nela Park headquarters, Cleveland.

Life ratings on these lamps have been set forward from 3,000 hours to 4,000 hours when burned five hours per start and from 5,000 to 6,000 hours when burned 10 hours per start. These 1,000-hour life rating increases represent a proportionate reduction in maintenance cost to users, officials of the company said, since users get more life per unit of cost per lamp.

The A-H1 lamp is for base-up burning and the B-H1 is for base-down burning. Both are recommended by lighting engineers in industrial applications where an efficient high level of uniform illumination is required over large areas. These lamps are largely used in such applications as in manufacturing plants, over assembly lines, in foundries and machine shops, in parking lots, gas stations, and other large areas.

The 400-watt F-H1 is for base-up burning, but differs from the A-H1 in that it has a mechanical instead of cemented base. It is recommended for street lighting service. These increased life ratings apply to lamps currently in stock, the company announced.

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Radio Tube-Contained Relay Operates Mechanically

A NEW Millisec relay with an operating time of one millisecond or less has been developed by Stevens-Arnold Co., 22 Elkins St., South Boston, Mass. It is assembled in a standard metal radio tube container but its operation is mechanical, not electronic. It is

made in one size, single pole, double throw, for use with resistive loads. It may be used with an inductive load, but for this purpose special tests at the factory are advised.

Only direct current is used on the contacts; alternating current is not recommended. Contact rating is 110 volts d.c., ½ amp. Life expectancy varies from 22 million operations at ½ amp. to 100 million at ¼ amp. Coils are wound for d.c. only, either 18 volts, 1,400 ohms or 6 volts, 150 ohms.

Among the features reported is its freedom from bounce, which is made possible by a new shock-absorbing system. This is said to permit its use as a square wave generator by applying a.c. to the coil and d.c. to the contacts.

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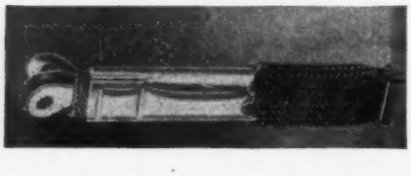
Miniature Thermostat Has 1,500-Watt Rating

DESIGNED for applications calling for a miniature thermostat with greater load-carrying capacity is the new "Master-Mite" thermostat. Rated for use up to 1,500 watts at either 100 or 220 volts a.c., it is furnished preset by the manufacturers up to a temperature range of 550 deg. F. and it is available either normally closed or opened. This is a companion to the "Mighty-Mite" thermostat, with capacity of 300 watts, announced last fall by the same concern, Mechanical Industries Production Co., 205 Ash St., Akron 3, Ohio.

Chief among its advantages is a substantially improved accuracy of operation even under extreme overshooting or undershooting of temperature. This has been accomplished by a new design feature permitting a firm but cushioned pressure upon the points. Long point life has also been obtained by a slight wiping action of the ¼-in. fine silver points.

This new lightweight thermostat is completely jacketed in aluminum, copper, or nickel and is insulated with silicon impregnated fiber-glass. It is moistureproof, dustproof, tamperproof, and adaptable to immersion in liquids.

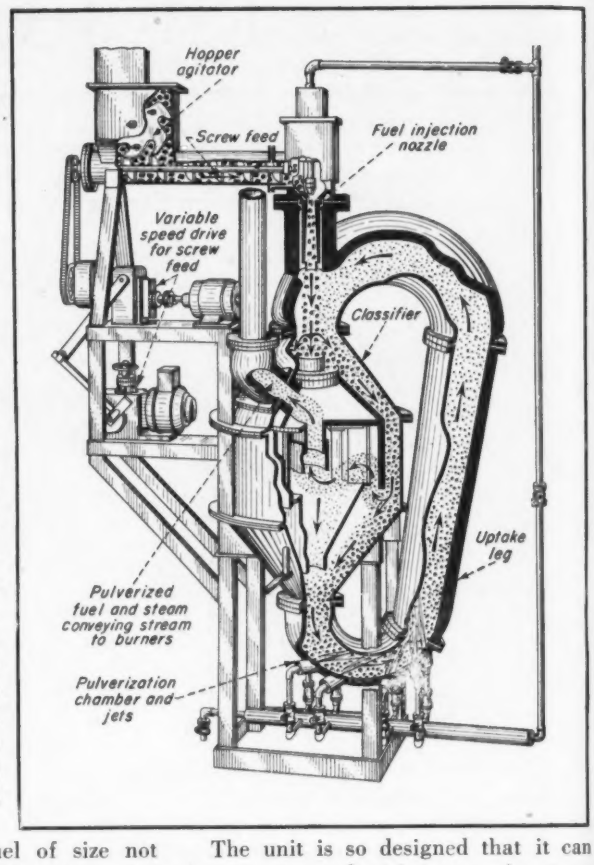
Classed as a heavy duty miniature (¼ in. thick, ½ in. wide and 2½ in. long), it has wide application in the electrical and industrial field for air-conditioning and refrigeration equipment, motor protectors, vulcanizers, and many electrical appliances.



Coal Pulverizer Utilizes Steam as Activating Agent

A NEW FUEL PULVERIZER, called the Fuelmiser, which utilizes steam as the activating medium in pulverization, eliminates the need for drying the coal, and feeds the pulverized particles directly to the burners, has been announced by the fuel equipment division, Blaw-Knox Co., Blawnox, Pa. Units are available in several sizes with a maximum capacity of five tons per hour.

The unit was designed to fit into confined spaces. The 2,800-lb per hour size requires about 3x5-ft. floor space. At full capacity, the steam used in pulverizing a pound of coal is approximately 0.6 lb. Pulverizing cost per ton of coal pulverized is reported to be approximately 4 cents, based on coal costing $5.00 per ton.



In operation, raw fuel of size not exceeding ½ in. is fed directly to the pulverizer. The desired rate of feed is obtained by adjusting the feeding mechanism, either by hand operation or by means of automatic control.

The fuel feed consists of a screw driven by a variable speed motor. The screw feeds the fuel into the mouth of a venturi, which, under the influence of a steam nozzle positioned directly overhead, forces the fuel down into the pulverizer onto a protection cover, from which the fuel is projected radially towards the outer walls of the classifier, falling through the bottom outlet to the pulverization zone in the bottom steam jet block where it is pulverized by steam at 750 deg. F. at 100 psi.

From the pulverization zone the fuel particles are carried with the steam through the uptake leg back through the classifier where the fuel which has been pulverized is classified according to size.

Fuel of approximately 200 mesh enters the outer chamber of louvres equally spaced around the diameter of the chamber. This louvre arrangement is provided with an operating device for opening or closing the louvres to the desired spacing or position to give proper directional flow of the fuel lines to the outlet. The fuel particles are driven out of this chamber to an outlet piping which leads to the pulverizer.

The unit is so designed that it can be set at any location upon its structural base without the use of foundations or bolting.

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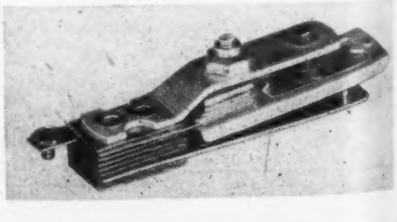
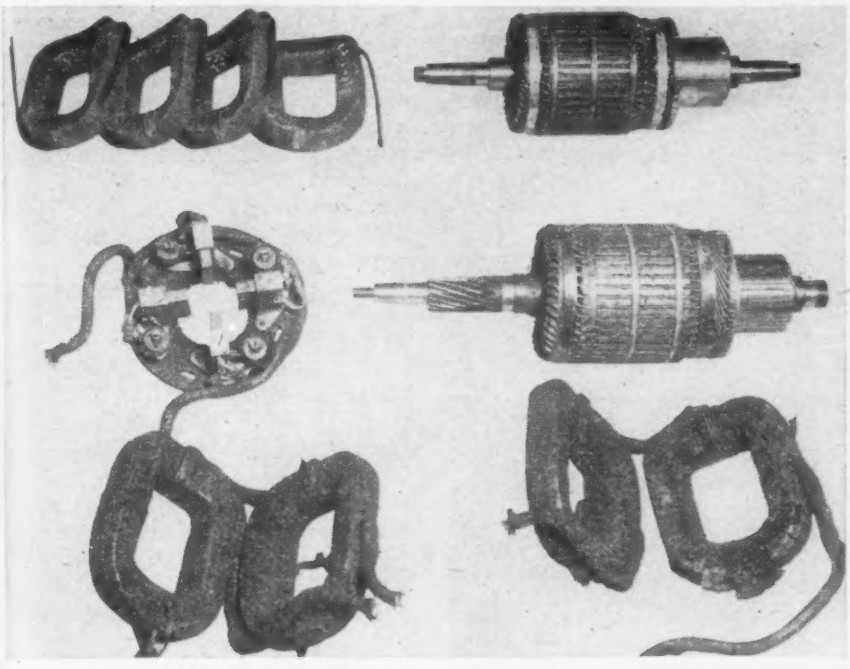
Mica-Insulated Thermal Cut-Out Switch Corrosion Proof

A NEW THERMAL cut-out switch of the snap-action type which will disconnect a machine or an appliance at a preset temperature has been developed by George Ulanet Co., 413 Market St., Newark 5, N. J. The switch, known as type RM Ula-Snap, has a rating of 1,500 watts, 110-220 volts a.c., and temperature rangings of 0-150 deg. F., 0-300 deg. F., and 0-700 deg. F. Upon opening, the switch keeps the appliance "dead" until reset by pushing the fibre button. Two holes with ⅞-in. centers are provided for mounting. The switch including terminals is 1 in. high x 1 in. wide x 3½ in. long. It is mica insulated, pile constructed and corrosion protected.



Electric Truck Motors Use Silicone Insulation, Grease



ALL 1947 TRUCKS made by Automatic Transportation Co., 149 West 87th St., Chicago 20, Ill., will utilize silicone varnish and grease as standard insulating and lubricating material for the motors, the company reports. Automatic is the first industrial truck manufacturer to adopt silicones as a standard, the Dow Corning Co., manufacturer of these products, reports.

Motors with this type of insulation and lubrication have been satisfactorily tested on trucks at the Automatic plant. Adoption of the new materials follows the Dow Corning tests of more than 5,000 hours of operation of motors at 300 deg. C. The grease is reported to retain the same consistency at temperatures from minus 40 deg. to plus 350 deg. F. The grease is reported not to creep into the armature and thereby eliminates possible short circuits.

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Glass-Silicone Laminates For Motors, Circuit Breakers

A GLASS-SILICONE LAMINATE having valuable qualities and characteristics for electrical insulation purposes has been reported by the Formica Insulation Co., Cincinnati, Ohio. It is said that the new plastic laminate is made from clean, stample-fiber glass fabric plus a silicone resin.

It is heat resistant, tests show, with silicone-insulated motors already operating at temperatures in excess of 250 deg. C. or 482 deg. F.

Since the silicone resins are cured at 250 deg. C., they operate easily at this high temperature and continuous tests are being maintained to ascertain their operating abilities at considerably higher temperatures, the company reports. The glass-silicone material also has arc resistance value of 265 sec.

Pending further tests, the glass-silicone laminate is not now recommended for radio or electronic uses, and it is contended that it should be considered for use on motors, circuit-breakers and any operation where high-temperature operation is contemplated.

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New Plastic Material Used in H. F. Equipment

A NEW PLASTIC material, called Textolite No. 1422, for use in television, frequency modulation radio and radar sets as well as other ultra-high frequency insulating applications, has just been announced by the plastics division of the General Electric Co., Pittsfield, Mass.

The new material possesses a low power factor with an A.S.T.M. heat distortion of 105 to 113 deg. C. and machines readily enough to be adaptable to automatic and semi-automatic fabricating equipment, the company reports.

It was disclosed that the new plastic can be used in many fields where compression and injection-molded plastics are not sufficiently suitable because of the close tolerances or where they do not possess the necessary combination of heat resistance and electrical properties.

Tests indicate that, under the light loads commonly encountered in connector assemblies, it will maintain its shape up to 200 deg. C. and, when fully loaded, will surpass the highest operating temperatures recommended for RG type coaxial cables. At this temperature, it does not flow but becomes flexible and, upon cooling, regains its normal rigidity.

It has a dielectric constant at 3,000 Mc. of 2.4 to 2.5 and a power factor at 3,000 Mc. of 0.0006 to 0.0009. It has a specific gravity of 1.045 to 1.050; tensile strength of 8,000 to 10,000 psi.; flexural strength (A.S.T.M.-D638-42T) of 15,000 to 18,000 psi.; compressive strength (A.S.T.M.-D649-42T) of 18,500 to 19,000 psi.; impact strength (A.S.T.M.-D256-43T) of 0.25 to 0.35, and a Rockwell hardness, H-scale, of 68 to 72.

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Machine Cleans Power Plant Floors Without Water

FLOORS in the electrical and industrial plant are cleaned without the use of water or chemicals by the model "K" industrial floor machine developed by G. H. Tennant Co., 2530 Second St., North, Minneapolis 11, Minn. The machine, operated by one man, burnishes the dirt from the floor.

Through a vacuum system powered by an 11-in. fan, light soilage is drawn in a large heavy-fabric bag. Heavy soilage is thrown into a large removable hopper by centrifugal action of of 16-in. steel wool roll or brush.

Power is provided by a 5-hp., 220-440 volt, 3-phase, 60-cycle (3,450-rpm.), electric motor which drives the drum at 1,725 rpm. Other standard motors obtainable include a 2½-5 hp., 3-phase, 220-440 volt, 3-phase motor which provides a drum speed of 850 or 1,725 rpm.

Extra attachments which adapt the machine to all types of floors are sand-

ing drum, fibre brush, and a steel wire brush. The machine utilizes triple-"V" belt drive; 8-in. puncture-proof tires, with high-low wheel adjustment; motor reversing switch; machine leveling adjustment; and a heavy duty drum bearing with a 1⅛-in. ground shaft.

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Heavy-Duty Toggle Switch Has Self-Aligning Blade

A NEW front-operated general duty safety switch in the heavy duty toggle type, with snap-action, double break type of mechanism, self-aligning blade, and 30-amp. capacity, has been announced by Wadsworth Electric Mfg. Co., Inc., Covington, Ky.

The switch cabinet is designed for domestic, commercial and industrial installation where space is limited. The cabinet is finished in baked enamel.

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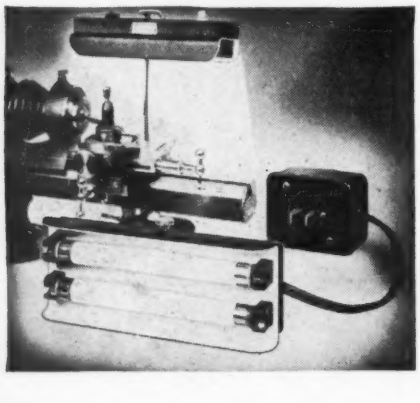
Miniature Fluorescent Lamp Produces 550-Ft.-C. Level

A MINIATURE fluorescent lamp which produces a light intensity of 550 foot-candles at a 3-in. working distance and a color temperature of 3,500 deg. Kelvin has been announced by Stocker & Yale, Marblehead, Mass. It was designed for installation on machines doing precision cutting and polishing, such as a jeweler's type lathe.

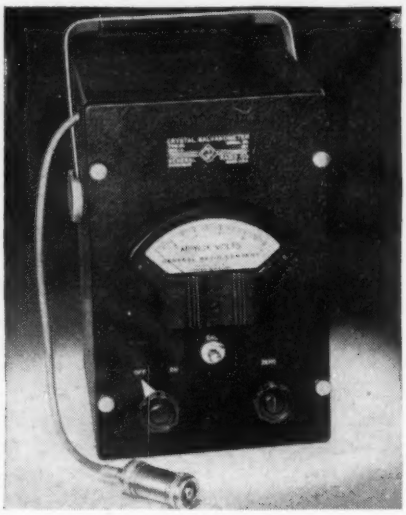
This high level of illumination on the subject, converging from widely divergent angles, floodlights the work and minimizes objectionable bright spots and reflections, the company reports.

Unit utilizes twin 4-watt tubes of standard design and is started by twisting the starter knob on the lamp. The lamp is finished with a baked black wrinkle exterior and a baked white reflector. Although normally supplied with a non-adjustable bracket and harmonizing cast base, it is also available without these supports where direct attachment to a machine is desired.



Uhf. Voltage Measurements Obtained by New Instrument

FOR DIRECT VOLTAGE measurements in the uhf. range, the General Radio Co., 275 Massachusetts Ave., Cambridge 39 Mass., announced the Type 1802-A Crystal Galvanometer. This new voltmeter is similar in principle of operation to the peak-reading type of vacuum-tube voltmeter, consisting of a rectifier and a d.c. amplifier, but uses a standard type of crystal rectifier in the probe in place of the conventional thermionic diode. High-frequency characteristics of these crystals make possible their use as rectifiers at frequencies well beyond the range of vacuum tubes, the company states. They are, however, less uniform in their characteristics than diodes, and consequently, the instrument has been named a galvanometer, rather than a voltmeter, to distinguish it from the more accurate instruments used at lower frequencies.



The range of the instrument is 0.1 volt to 1 volt, and decade multipliers to fit the probe are supplied for multiplying factors of 10 and 100. The accuracy of indication is ± 5 percent, subject to frequency correction, curves for which are furnished. The frequency range for direct voltage-measurements is from 10 to 1,000 megacycles, but voltage-ratio measurements can be made at frequencies well above 1,000 Mc., while as a simple voltage indicator, the instrument will operate up to about 3,000 Mc.

A coaxial adapter and a 50-ohm, disc-type, terminating resistor are supplied in addition to the multipliers. Cathode and plate power for the d.c. amplifier is obtained from self-contained batteries.

Input capacitance depends upon the crystal; input conductance upon frequency, voltage-level, and crystal. Representative values are 5 uuf. and 100 microhms. Over-all dimensions are 7 x 7 x 10½ in. Net weight is 10¾ lb.

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Instrument Detects Minute Leaks in Vacuum Systems

A NEW PORTABLE leak detector that can locate and measure leaks in vacuum and pressure systems as minute as 0.00000001 cc. per second has been developed by the Consolidated Engineering Corp., 620 North Lake Ave., Pasadena 4, Calif. Based on the mass spectrometer principle, the instrument electronically separates and measures helium molecules, by reason, only, of their mass, from all dissimilar molecules in the atmosphere. Introduction of helium in suspected areas is reported to give an almost immediate indication on the visual meter or audio alarm system whenever a leak is present.

The instrument can be operated by an inexperienced person. Selection of sensitivity over six different ranges can be had for measuring almost any rate of leakage. The size of the leak can also be determined with the audio system when using a helium probe at a distance from the instrument. The pitch of the leakage warning signal changes roughly in proportion to the leak size.

Instrument is completely portable since it is installed in a 43 x 25 x 22-in. cabinet which is mounted on rubber-tired casters. Electrical chassis are mounted on the back of the door, which has a removable panel to permit entrance to the wiring of the chassis. Standard electrical and vacuum system components are used throughout. The equipment is operated from a 115-volt, 60-cycle circuit.

Because of the basic importance of adequate wiring to the entire electrical industry, Anaconda is presenting messages like this in a wide list of national publications

Wire ahead!

to keep in step

HERE is a picture of what *can't* happen if the split-second coordination, for which automobile plants are famous, is to prevail.

But it can happen, and it *will* happen in any plant without adequate wiring. For, when obsolete wiring, overtaxed wiring, over-extended wiring can reduce the efficiency of man and machine by 25 to 50 per cent, production is reduced accordingly. With lost production, you can't keep in step with competition.

It may pay you to check on your wiring at once. Ask your plant power engineer, consulting engineer, electrical contractor or power salesman. A wiring survey now may save costly shut-downs and expensive alterations later. 46320

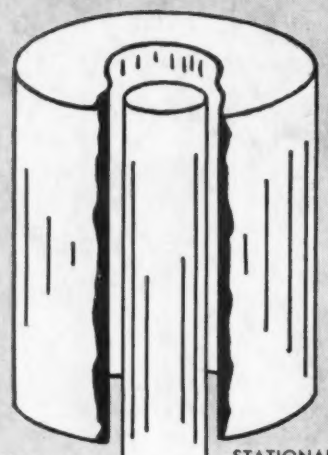
DON'T BE PENNY-WISE AND POWER-FOOLISH

ANACONDA

ANACONDA WIRE & CABLE CO.

"Feather-Touch" Control

It Helps Give You Closest Line Regulation With Allis-Chalmers 5/8% Step Regulators

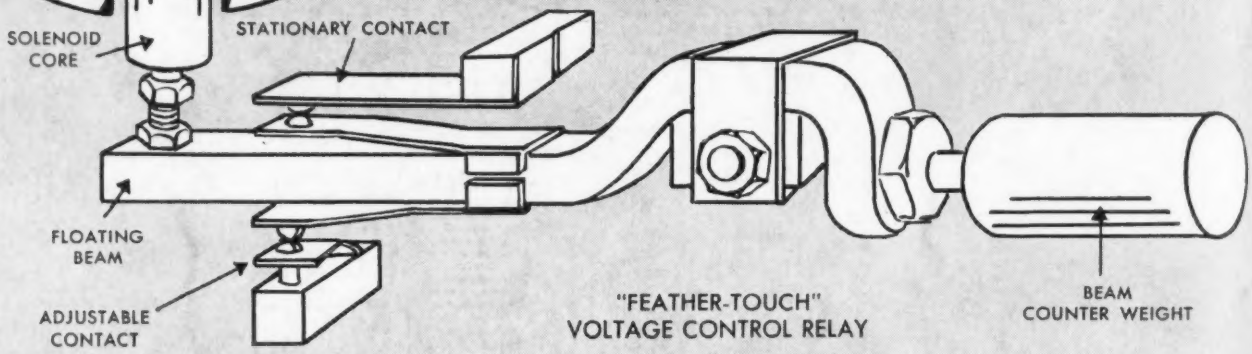


"Feather-Touch" control relay employed on A-C 5/8% Step Regulators is a prime factor in ability of regulator to hold voltage within plus-minus 3/4 volt.

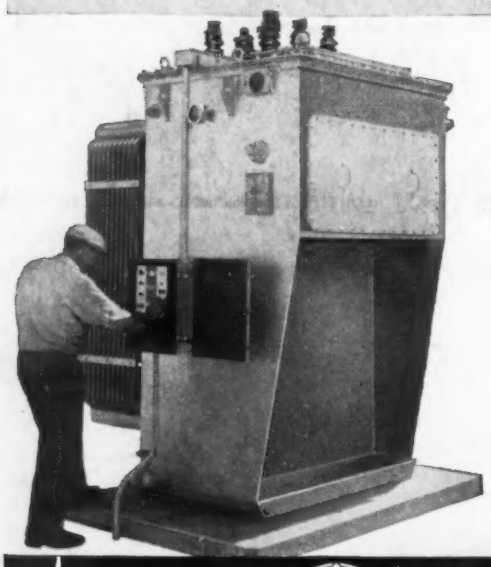
No holding coils are required. Absence of damping effect of coils means that floating beam can closely follow every fluctuation in line voltage.

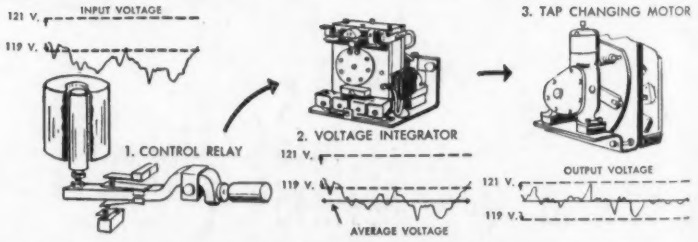
No overshooting or slowed-down response in "Feather-Touch" control relay — 5/8% band width is held easily.

Combined with "voltage integrator" used in control for Allis-Chalmers 5/8% Step Regulators, the "Feather-Touch" relay makes possible the closest feeder regulation to be had today!



"FEATHER-TOUCH" VOLTAGE CONTROL RELAY





Control Arrangement for A-C 5/8 % Step Regulators

INPUT VOLTAGE fluctuations are accurately followed by "Feather-Touch" control relay, and are fed into "voltage integrator." Integrator sums up these fluctuations, and starts operation of tap-changing motor whenever average voltage is outside band setting, thus maintaining voltage at desired level. For complete description of A-C 5/8% Step Regulators, call our nearby sales office, or write directly to ALLIS-CHALMERS, MILWAUKEE, WIS.

A-2060

ALLIS CHALMERS

★ One of the Big 3 in Electric Power Equipment
Biggest of All in Range of Industrial Products ★

5/8% STEP REGULATORS